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ON

GALL STONES AND CANCER OF THE GALL BLADDER:

AN EXPERIMENTAL STUDY.*

BY

ARCHIBALD LEITCH, M.D.,

DIRECTOR OF THE CANCER HOSPITAL RESEARCH INSTITUTE, LONDON.

(*With Special Plate.*)

WE have succeeded in producing cancer experimentally in animals by the use of various special agents. Fibiger[1] produced it by the nematode *Spiroptera neoplastica*, Bullock and Curtis[2] by another parasite, the *Cysticercus fasciolaris*, and Yamagiwa and Ichikawa[3] by coal tar. In our own laboratory we have produced cancer by coal tar[4] and tar extracts,[5] by pitch,[6] by soot, by arsenic,[7] by shale oil and industrial oils derived from shale,[8] by crude petroleums and lubricating oil, and by a tarry substance prepared from isoprene.[9] Bloch,[10] and, probably before him, Marie, Clunet, and Raulot-Lapointe,[11] induced it by means of *x* rays. In addition to these cancer-producing agents, we have in the human subject others, the relation of which to cancer cannot reasonably be doubted, though they still lack experimental confirmation: the heat of the kangri-pot causing epithelioma of the thighs and abdomen amongst the natives of Kashmir[12]; the betel preparation associated with buccal cancer in Asia[13]; the bilharzial ova inducing vesical and intestinal cancer in Egypt[14] and Japan; and several others less definitely established.

But these known irritants are responsible for a very small proportion of the cancers that occur. They are all of extrinsic origin and entirely foreign to the economy. They act, presumably, not as simple mechanical agents, but in virtue of some peculiar property they possess. Even if we give full scope to our imagination we cannot inculpate any analogous external irritants in the generality of human or animal cancers. If we are to establish the irritation theory of cancer on a broader and surer basis we must search for possible internal irritants. I have therefore been led to the conclusion that substances capable of producing cancer by their prolonged action on the tissues may be elaborated within the body as the result of other pathological processes. In other words, the main mass of carcinogenic agents are endogenous. How these originate we may sometimes guess: of their chemical nature we are at present entirely ignorant. To entertain such a belief as this is legitimate, but to seek to promulgate it without proof is to hinder rather than to help scientific progress. At first I endeavoured to produce cancer by substances which might be considered as intermediate between wholly extrinsic and wholly endogenous. Knowing that cancer of the intestines progressively increases in frequency from the duodenum to the rectum and that putrefactive changes in the bowel contents increase in parallel, I selected at random certain products of intestinal putrefaction, such as skatol, paracresol, tyrosine, and methyl-mercaptan, and introduced these into the lower bowel of mice, rats, guinea-pigs, and rabbits, thrice weekly for many months, but without producing any signs of tumour formation. Of course, there are numerous other putrefactive products that we might use, and we might be fortunate with some of them. Similar use of a tar extract, which proved to be very potent in inducing epithelioma when applied to the skin of mice, failed to produce intestinal cancer in any of these four species of animals. There is in the human subject, however, one outstanding cancer, cancer of the gall bladder, which is closely associated with a particular irritant, and an irritant, moreover, which is entirely endogenous. To this we have directed our investigations.

* Delivered to the Isle of Thanet Division of the British Medical Association on May 30th, 1924.

GALL STONES AND CANCER IN MAN.

It is beyond the scope of this paper to discuss the etiology of gall stones. It was formerly believed that gall stones originated in the gall bladder owing to stasis of the bile and acute inflammations of the viscus, but this is now discounted, and it is becoming more generally accepted that the part played by the gall bladder is quite secondary, or even passive, and that in all probability there is no lesion in that organ preceding the formation of the calculi. Possibly in the majority of cases gall stones give rise to no definite symptoms during the life of the person and are only discovered *post mortem*. The statistics as to the frequency with which they are found vary from 1.5 to 25 per cent., according to the age composition of the hospital patients. Schröder,[15] who analysed von Recklinghausen's autopsy records, found that 12 per cent. of all persons had gall stones; they were rare under the age of 30 (3 per cent.); they were found in 10 per cent. of the cases between the ages of 30 and 60, whilst 25 per cent. of people over 60 years of age had gall stones. They are thus quite common. Cancer of the gall bladder is by no means a rare disease. Kaufmann[16] states that according to the Breslau statistics it forms 5 per cent., and to the Basle statistics 5.19 per cent., of all carcinomata coming to autopsy. Now, in cancer of the gall bladder gall stones are generally present. In 268 cases collected by Futterer and Haberfeld they were present in 70 per cent.; in Musser's series in 69 per cent.; according to the figures of St. George's Hospital (Rolleston) in 75 per cent.; Winton gives 81 per cent., Zenker 85 per cent., Courvoisier 91 per cent., Siegert 95 per cent., and Janowski 100 per cent.[17] As these figures have been compiled from *post-mortem* records we cannot conclude that gall stones were absent unless there was a definite statement to that effect. Musser, however, states that in 3 of his 100 cases calculi could not be found, and several other writers have noted the occasional absence of gall stones. In what proportion of cases of gall stones does cancer of the gall bladder occur? The statistics on the point are surprising. The lowest figure I have found is that given by Candler[18] from asylum practice—namely, 2 in 315—and the highest that by Slade,[19] 30 per cent. Rolleston gives 4.5 per cent., Mayo slightly under 5 per cent., Moynihan 5 per cent., Riedel 7 to 8 per cent., Mayo-Robson 10 per cent., Schröder 14 per cent. Slade's figures (30 per cent.) are certainly much too high: they were based on an exceptional sample; and some of his illustrations would fail to convince a pathologist of the accuracy of the diagnoses. If we put the figure at 5 per cent. we shall probably be safe, but even if we bring it down to Candler's low estimate it will still be a surprisingly high incidence if we consider how low the incidence of cancer is amongst those who are subjected to other cancer-producing irritants. Probably less than 1 in 1,000 of pitch-workers, tar distillers, paraffin-oil refiners, and betel chewers, ever develop their peculiar cancers; though, on the other hand, the early *x*-ray operators had an extraordinarily high incidence.

Taking all these facts into consideration—that over 10 per cent. of adults have gall stones, that 5 per cent. of these develop cancer of the gall bladder, and that gall stones are present in practically all cases of gall bladder cancer—we have good grounds for believing that cancer of the gall bladder is the result of the irritation set up by the gall stones. On the other hand, some have maintained that the calculi found in cases of carcinoma are the consequence of the carcinoma and not its cause. Such a view cannot lightly be dismissed. If we accept the vesical origin of gall stones we must admit that such a gross lesion of the epithelium as carcinoma will be likely to induce the formation of calculi, either by reason of some exaggerated or pathological secretion of the malignant cells or by the detachment of tissue fragments that may serve to form nuclei for the deposition of cholesterin from the bile. Gall stones, however, are not specially frequent in cases of metastatic nodules in the gall bladder wall. Secondly, gall stones are sometimes absent in gall bladder cancers. To this very important objection it may be replied that in no case can we be sure that gall stones were not present at some previous time; they may have escaped through the bile duct or have

ulcerated into an adherent portion of bowel. Mr. F. K. Smith of Aberdeen has been kind enough to supply me with notes of a case of carcinoma of the gall bladder which occurred six years after stones had been removed from that organ. Thirdly, simple tumours of the gall bladder are very rare, and, if we bear in mind the frequency with which true malignant tumours are preceded by benign neoplasia in other instances of irritation cancers, we should expect to encounter the preliminary simple tumours much more commonly, especially in *post-mortem* examinations. I have seen two specimens of simple tumours of the gall bladder removed by operation; in neither were gall stones present, nor was there any sign or history pointing to their previous presence. In the few cases of benign tumours of the gall bladder on record stones were absent in half the number. Lastly, we have no convincing examples of cancer being caused by purely mechanical irritations; calculi in other situations, such as the urinary bladder or appendix, are seldom associated with malignant tumour formation. It may be, of course, that the action of the gall stones is not purely mechanical; their chemical composition may be the important factor, and my colleague Dr. H. J. B. Fry has had some interesting experimental results indicating that the action of a weak tissue irritant, insufficient by itself to initiate tumour formation, may be considerably reinforced by cholesterin.

We are thus confronted with a difficulty which cannot be solved by clinical observations and disputations. Are the gall stones the cause of cancer of the gall bladder, or does cancer of the gall bladder bring about the formation of the gall stones? The hazard of experimental investigation was peculiarly alluring, for successful results would not only solve this long-debated question, but would encourage us to pursue, in spite of failures, our quest for endogenous causes of cancers. But the omens were not wholly favourable.

Experiments on Animals.

Hitherto we have had no experimental proof that purely mechanical irritation is capable of inducing tumours. In my own attempts with such irritants I have failed. Bullock and Rohdenburg,[20] in criticizing Fibiger's original experiments, maintained that only excessive hyperplasia of the gastric epithelium had been induced by the mechanical irritation of the spiropterae, and they claimed to have produced similar lesions in the rat's stomach by inserting pieces of sponge into the cavity. Their criticism of Fibiger's results, of which they had not fully informed themselves, was unfortunate, but it has always seemed to me that if they had given longer time to their experiments they might have succeeded in producing actual epithelioma. Just before my experiments were commenced, Kazama[21] claimed to have induced tumours of hollow viscera in a variety of animals by various mechanical and chemical forms of irritation, such as invaginations of mucosa, insertion of sutures, and injections of lanoline and other substances. The English translation of his paper was rather obscure, but one of his tables showed that, amongst other things, he had introduced pebbles into the gall bladder of dogs, rabbits, and guinea-pigs. He used 30 guinea-pigs, which survived the operation from 1 to 116 days, and he claimed to have produced in them the following results: "papillous growths, 6; heterotopic glandular growths, 10; heterotopic or atypical growths, 3; atypical growths, 5; early adenocarcinoma, 3; adenocarcinoma and metastasis, 4," the latter being in the chest wall in 2, in the intestines in 1, and in the liver in 1. Unfortunately this shows that the number of positive results exceeded the number of animals, and the claim seems the less convincing when we notice that at least one of the animals died within a day or two of operation and none survived for four months. In instituting my own experiments I had to face the fact that the gall bladder of mice is much too small for operation, and that rats, which would otherwise have been the animals of choice, do not possess a gall bladder. Rabbits were too large to use in sufficient numbers. Guinea-pigs, which would be ideal in many respects, are peculiar in that they are not naturally affected with cancer, and that we have always failed to induce tumours in them by any of the various means we have adopted with success in other species of animals. It may even be said that they practically never develop any sort of tumour. When one remembers that hundreds of thousands of guinea-pigs must have been examined throughout the laboratories of the world and yet the only instance of a tumour being recorded was that mentioned by J. A. Murray[22]—a transplantable lipoma—the apparent natural immunity of these animals to the causal agent or agents of cancer will appear all the more striking. Nevertheless we employed guinea-pigs in our experiments, and the result has been successful beyond our hopes.

Author's Experiments on Animals.

An area over the lower part of the chest and the upper part of the abdomen was epilated by means of sodium sulphide (10 per cent. solution) and rendered aseptic by the application of violet-green solution (0.5 per cent. brilliant-green and 0.5 per cent. methyl-violet in 50 per cent. alcohol). Sterile sheets covering the rest of the animal were clipped on to the edges of the operation area, and the abdomen was opened by an incision running parallel to the lower ribs. The very thin-walled, semi-transparent, spherical gall bladder was readily found and steadied by two small forceps half an inch apart, and a small incision, just sufficient to admit the foreign body, was made with fine scissors. When this was inserted, the cut edges were united by means of a continuous suture of the finest catgut obtainable threaded on a fine needle, and the two ends of the suture were tied together. It will thus be seen that the ridge projecting into the lumen was doubled on its length, and would therefore appear, when viewed from the inside, as more or less of a nodule. It is important to bear this in mind when considering the changes that one might be inclined to attribute to the action of foreign bodies, especially as the displacement and irregularity of the mucosal elements, when seen in microscopic section, will be much exaggerated and will provide a histological picture that may tempt the uncritical to conclude that a small tumour, even of a malignant nature, has been produced. It seemed to me in reading Kazama's communication, and studying the photomicrographic illustrations that appeared in a subsequent paper by him, that this was the criticism that must be passed on his findings, and, indeed, the examination of the conditions in those animals of mine that died within a short time of the operation supported that judgement.

In 25 guinea-pigs I inserted one gall stone, sometimes two, into the gall bladder. These gall stones, roughly about the size of lentils, had been removed four years previously from a patient with cholelithiasis and had been kept in a dry state. They were not sterilized before use. It may be mentioned, in view of Lazarus-Barlow's statement[23] that gall stones associated with gall bladder cancer contain radium while others do not, that I had these calculi examined by our physicist, Mr. C. E. S. Phillips—using methods that would be approved by physicists—but they did not contain any perceptible trace of radium. In 5 cases small, smooth pebbles, sterilized beforehand, were used as the foreign bodies; in another batch of 5, pilules of pitch were inserted. Finally, I injected melted lanoline by means of a hypodermic syringe into the gall bladder of 5 animals, but the puncture wound had to be closed by a stitch. To enable us to identify each animal, coloured charts of the markings of all the guinea-pigs were made at the time of operation.

The experiments in which lanoline had been injected can be dismissed quite briefly as they yielded no positive results. Three of the animals, Nos. 36, 39, and 40, died eleven days after operation, and in all three there was complete desquamation of the lining epithelium with absence of the gland tubules save at their deepest parts and more especially at the site of the needle puncture where a stitch had to be inserted. Here the displacement and irregularity of the tubular epithelium might give rise to a suspicion of early malignancy, but such an appearance is merely temporary and the normal condition is afterwards restored, as could be seen from an examination of the gall bladder of No. 37, which died at the end of five and a half months. (Fig. 1.) The fifth guinea-pig, No. 38, is still alive eighteen months

FIG. 1. Natural size.

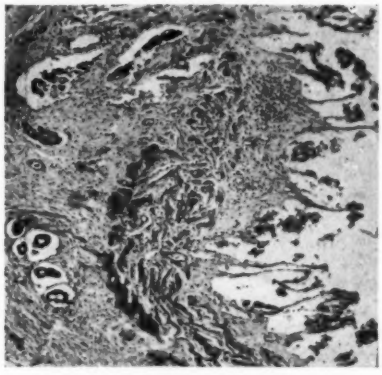


FIG. 2. × 35.

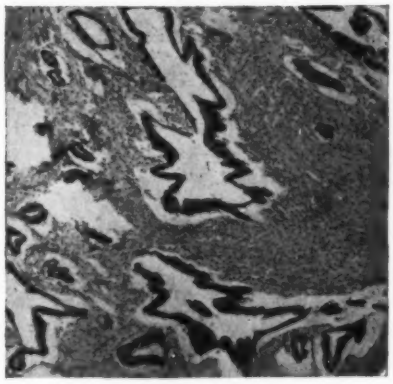


FIG. 3. × 35.

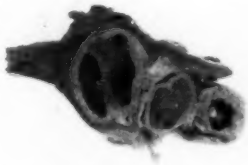


FIG. 4. Natural size.

FIG. 5. Natural size.

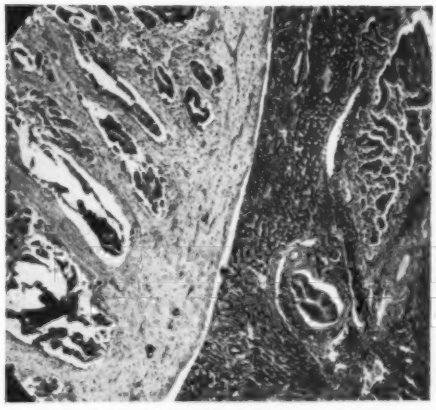


FIG. 5. × 30.

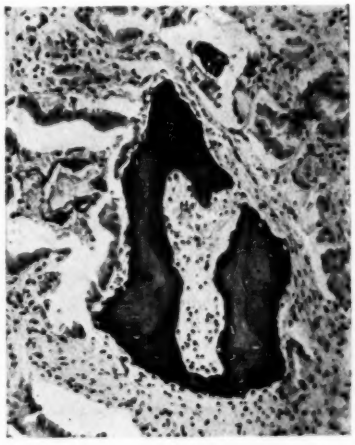


FIG. 8. × 100.

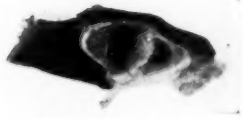
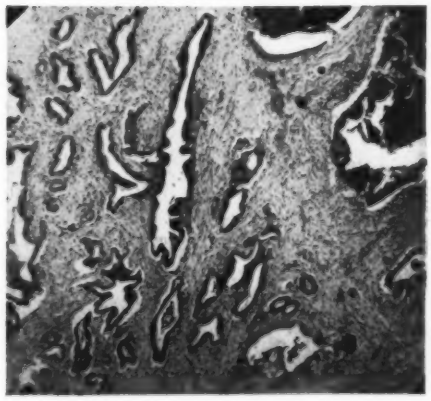


FIG. 7. Natural size.

FIG. 9. Natural size.



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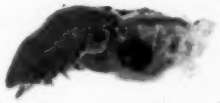

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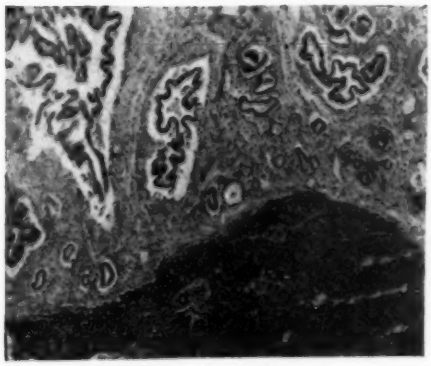

FIG. 12. × 30.

FIG. 13. Natural size.

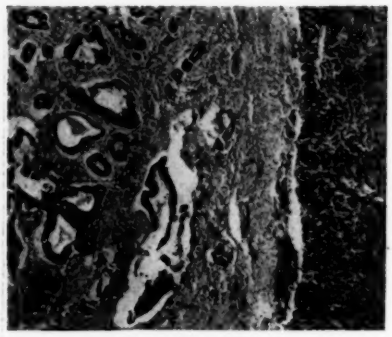

FIG. 14. × 30.

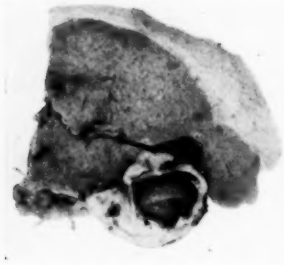

FIG. 15. Natural size.

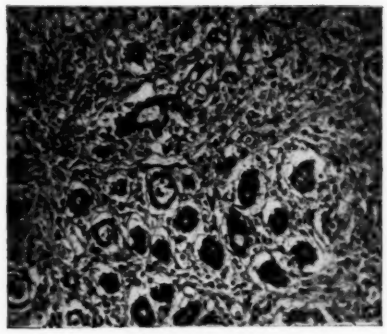

FIG. 16. × 100.

FIG. 17. Natural size.

FIG. 18. Natural size.

FIG. 19 × 60.

FIG. 20. Natural size.

FIG. 21. × 75.

FIG. 22. × 40.

FIG. 23. × 50.

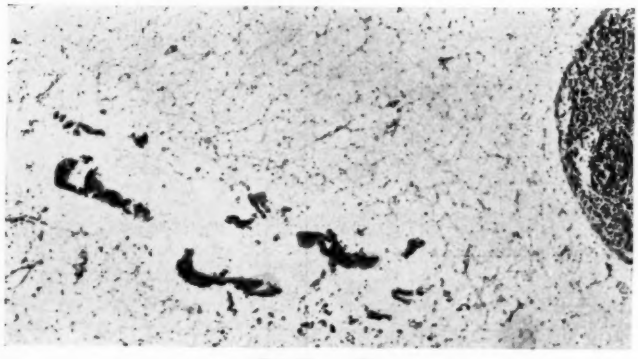

FIG. 24. × 75.

after operation, and when its gall bladder was inspected by exploratory operation exactly a year after the lanoline had been injected it was found to be perfectly normal.

The solid foreign bodies—gall stones, pebbles, and pitch pellets—gave results comparable to each other, and we may consider them together in the order in which the animals died. Two guinea-pigs with gall stones, Nos. 7 and 9, died within a few days of operation, as the result of tearing out their stitches.

[The illustrations of gall bladders with adjacent liver tissue reproduced in the special plate were photographed from the remnants left after providing material for histological purposes, and do not adequately represent the conditions that presented themselves originally to the naked eye. For the photographs and photomicrographs I am much indebted to Dr. D. J. Reid.]

No. 25: Gall stone inserted on January 15th, 1923. Died on January 29th (2 weeks). The lining epithelium and the more superficial portions of the tubules were destroyed. Displacement and irregularity of the gland epithelium in the vicinity of the sutures.

No. 18: Gall stone inserted on January 11th, 1923. Died on February 13th (1 month). The gall bladder was contracted and its opaque walls were irregularly thickened to 2 mm. or more. The superficial and gland epithelium was destroyed, leaving the intertubular connective tissue projecting bare into the lumen. (Fig. 2.) Deep in the thickened wall there were well preserved, though irregular, portions of the gland tubules.

No. 31: Pellet of pitch inserted on January 17th, 1923. Died on May 7th (3½ months). The pitch lay in a small smooth cavity in a thick-walled fibrous mass which represented the gall bladder. For the most part the lining membrane had been destroyed, but over one-third of the circumference of the cavity it had been converted into squamous epithelium, and underneath this the muscular layers were intact, and there was no trace of tubules. At other parts of the thickened wall there was considerable and very irregular proliferation of the glandular epithelium amongst new-formed connective tissue, along with disintegration of the muscle bundles. (Fig. 3.)

No. 11: Two gall stones inserted on January 9th, 1923. Died on May 5th (4 months). The gall bladder wall was slightly thickened, rough, and contracted over the calculi. The superficial epithelium had been lost, but was being regenerated from the deeper parts of the tubules, which were actively proliferating.

No. 24: Two gall stones inserted on January 15th, 1923. Died on June 11th (5 months). The gall bladder was enlarged, and on section apparently multilocular, but the walls were not much thickened except in the loculus containing a stone, where they were over 2 mm. in thickness. (Fig. 4.) Sections through the latter part showed much hyperplasia of gland epithelium with numerous cysts. The condition might be described as cystadenoma of doubtful nature. A small hard subcutaneous nodule was found in the chest wall opposite the liver, but on microscopic examination this was seen to be composed of fibrous tissue only.

No. 26: Pebble inserted on January 16th, 1923. Died on July 1st (5½ months). The gall bladder was represented by an irregular, moderately hard, whitish mass adherent to the liver, and, at one part, insensibly blended with it. The liver substance contained numerous white irregular areas, and on the under surface of the liver there was a subcapsular prolongation from the fundus of the gall bladder. (Fig. 5.) On section the mass was solid save for a central cavity occupied by the pebble, on which there was a thin greenish deposit. Microscopic preparations showed adenocarcinoma of the gall bladder, the appearances being repeated in the subcapsular prolongation and in the white areas in the liver substance. (Fig. 6.)

No. 21: Gall stone inserted on January 15th, 1923. Died on July 2nd (5½ months). There was a small bare area of skin over the lower ribs, with indefinite thickening underneath it. The gall bladder, enlarged and hard, was adherent to the chest wall opposite this area. Section through the gall bladder showed it to be thick-walled, loculated, and in direct continuity with a whitish patch underneath the skin. Microscopic examination revealed adenocarcinoma of the gall bladder invading the chest wall and eroding and destroying the rib cartilages. This formed one part of the subcutaneous nodule, but the greater part of it was composed of loose fibrous tissue.

No. 27: Pebble inserted on January 16th, 1923. Died on July 2nd (5½ months). The gall bladder wall was thin for the most part, but was thickened towards the fundus where the pebble lay. Microscopic examination showed an apparently simple hyperplasia of the gland tubules.

No. 7: Gall stone inserted on January 3rd, 1923. Killed on July 3rd (6 months). The thin-walled gall bladder was firmly contracted round the calculus and gave no evidence of neoplasia.

No. 15: Two gall stones inserted on January 11th, 1923. Died on July 8th (6 months). The gall bladder was very small and contracted over the stones. The wall was thin and translucent.

No. 5: Gall stone inserted on January 15th, 1923. Died on July 14th (6 months). The liver was firmly adherent to the lower ribs and ensiform cartilage, and on being separated disclosed a mass of fibrous tissue, which was in direct continuity with the gall bladder. The latter was thick-walled and had a central cavity occupied by the calculus and another smaller empty loculus. (Fig. 7.) Microscopic examination of sections showed very great proliferation of tubular epithelium in the wall of the gall bladder, and also in the fibrous mass. The adenocarcinoma invaded the ribs. (Fig. 8.)

No. 14: Gall stone inserted on January 9th, 1923. Died on July 15th (6 months). The anterior surface of the liver was adherent to the diaphragm and ribs, but these were easily separated and left an extensive white patch on the liver surface. The gall bladder, continuous below with this patch, was represented by a whitish solid mass fading insensibly into liver tissue. (Fig. 9.) Histological examination revealed extensive proliferation of tubular epithelium, the walls of the tubules being generally one cell thick, infiltrating and destroying the liver parenchyma. (Fig. 10.)

No 32: Pellet of pitch inserted on January 17th, 1923. Died on July 17th (6 months). There was a subcutaneous nodule over the lower ribs, and on the under surface of the liver there was a large irregular bulging whitish mass merging insensibly into the liver substance. (Fig. 17.) On section, this mass was found to be continuous with one end of a shrunken, irregular, thick-walled gall bladder and, on the other side, with the subcutaneous nodule. For the greater part the mass was necrotic, but at its margins it was white and glistening, and evidently spreading into the liver substance. (Fig. 18.) Microscopic examination of the necrotic portion showed dense areas of leucocytes surrounding the remains of tubules, whilst the white marginal portions exhibited masses of dilated and irregular tubules infiltrating and destroying the liver parenchyma almost to its surface. (Fig. 19.) The subcutaneous nodule was composed of young fibrous tissue in the centre of which were indefinite remains, possibly of tubules.

No. 4: Gall stones inserted on January 4th, 1923. Died on August 7th (7 months). The gall bladder was contracted, with thick soft spongy walls, not sharply delimited from the liver. (Fig. 11.) Microscopic examination showed very irregular proliferation of gland tubules, which were not traced into the liver substance, but approached very closely to it. (Fig. 12.)

No. 22: Two gall stones inserted on January 15th, 1923. The guinea-pig remained in apparently good health, and an exploratory operation was performed on January 15th, 1924 (1 year). The animal died two days later from internal haemorrhage resulting from the breaking down of adhesions. The duct end of the gall bladder was thin-walled and dilated, but the fundus was represented by a hard mass buried in the liver substance and containing a single stone, the other stone being in a diverticulum of the cystic duct. (Fig. 13.) Microscopic examination revealed adenocarcinoma of the gall bladder just beginning to infiltrate the liver substance. (Fig. 14.)

No. 13: Gall stone inserted on January 9th, 1923. An exploratory operation was performed on January 9th, 1924, when, on separating adhesions, the gall bladder was found to be small, fairly translucent, and apparently not thickened. The stone was easily palpable. A loop of intestine was torn, and the animal died of peritonitis on January 18th (1 year, 9 days). Section through the liver and adherent gall bladder showed that, though the aspect of the bladder seen at operation was not much altered, the side adherent to the liver was irregularly thickened and a somewhat haemorrhagic prolongation from it penetrated into the liver substance. Growing from this side of the gall bladder was a soft pedunculated mass of tissue projecting into the cavity and filling it save for the part occupied by the stone. (Fig. 15.) On microscopic examination this tumour mass was seen to be composed of a very cellular stroma, embedded in which were narrow irregular tubules. (Fig. 16.) At other parts the tubules were large and irregular, and lined with many layers of tall columnar epithelium. These structures were traced for some distance into a cirrhotic liver.

No. 30: Pebble inserted on January 19th, 1923. Exploratory operation on January 29th, 1924, revealed dense adhesions around a hard mass occupying the position of the gall bladder, and on trying to separate these the liver was torn and the animal died from internal haemorrhage next day (1 year, 10 days). On subsequent dissection the intestines and omentum were found to be firmly adherent to the gall bladder, which on the other side was adherent to the body wall. The gall bladder itself was a hard mass, solid save for the small cavity in which the stone lay, and in this mass there were patches of whiter tissue along with haemorrhagic areas. (Fig. 20.) At some parts the wall was three-eighths of an inch thick. The stone had a thin coating of brown pigment. Microscopically the wall of the gall bladder was represented by excessively and irregularly proliferated tubular epithelium set in areas of dense connective tissue. (Fig. 21.) Within this mass areas of liver cells were found. (Fig. 22.) Part of the epithelium lining the small cavity was converted into squamous epithelium (Fig. 23), and several of the dilated tubules contained deeply staining concretions. The adherent omentum was infiltrated with malignant cells (Fig. 24), but the process could not be traced into the muscles of the abdominal wall.

In addition to these, 11 with gall stones, 2 with pebbles, and 2 with pitch pellets were still alive at the end of fifteen months. All these have undergone exploratory examinations on the anniversary of their first operation, but it was impossible to say how many of them were malignant owing to the restricted examination permitted by adhesions. The two with pebbles had apparently more or less normal gall bladders. In one of the pitch cases the condition was doubtful; and in the other the appearances seemed to exclude malignancy. Of those with gall stones, 3 were considered to be malignant, 3 doubtful, 3 shrunken without signs of growth, and 2 thin-walled, distended, and probably normal. The final reckoning of the success of the experiments must await a later examination of those animals that still remain alive

DISCUSSION OF RESULTS OF EXPERIMENTS.

It will be seen from the experiments detailed above that the lesions produced in the gall bladder by the solid foreign bodies gradually increase in severity according to the length of time the animals survived. Soon after their introduction there is denudation of the epithelium lining the viscus, followed later by regeneration from the portions of the gland tubules set deeper in the wall. The activity of this tubular epithelium, accompanied by activity of the stroma, becomes more and more marked, the constant trauma exerted by the foreign body, perhaps accentuated by efforts at expulsion, producing repeated destruction of the surface epithelium and repeated replacement from the gland epithelium. In some cases a state of equilibrium is attained, the wall of the gall bladder either being restored to its normal condition with the calculus lying free in the cavity or, owing to the formation of fibrous tissue, contracting down tightly over the stone, when proliferation ceases. In the majority of instances, however, the epithelial activity continues, the tubules growing this way and that through the wall. We have no landmarks to guide us; the muscular bundles do not form, even in the normal gall bladder, an unbroken investment over the glandular layer; and in these experiments the muscle fibres are broken up and often wholly destroyed. We have, therefore, no means of determining when the heterotopy and irregular growth of the tubular epithelium ceases to be translatable as simple hyperplasia and assumes the definite characters of malignant neoplasia, and the difficulty is increased by the fact that frequently, but not invariably, the lining of the proliferating gland tubules, no matter how irregularly or how far they ramify, remains one cell thick, and the nuclei, at all times poor in chromatin, seldom take a deeper stain. It is only when neighbouring tissues are invaded that we have allowed ourselves to consider the process malignant. Short of that there is considerable room for difference of opinion. It is thus impossible to say in how many of our experiments cancer was produced. To my mind, Nos. 26, 21, 5, 14, 32, 22, 13, and 30—all of which showed involvement of adjacent structures—are beyond reasonable doubt malignant. On the other hand, none of the animals that died within four months presented any lesion that should be regarded as more than regenerative hyperplasia, but the process is so gradual and the dividing line so imperceptible that Kazama's claims regarding his experiments, which at first I was inclined to reject, should not be dismissed as groundless, and doubtless he would have obtained indisputable carcinoma in some cases had his animals lived longer.

The feature of these tumours is the invasive character of the growth, and the liver becomes involved by continuity and not by metastatic process. The infiltration is generally confined to the lobe to which the gall bladder has adhered or two adjacent lobes between which it has become wedged, and in no case has the process spread to lobes at a distance. In histological preparations it is not always possible to distinguish a bile ductule from an invading tubule, but the great irregularity of the proliferation in most cases leaves little room for doubt. From the mass in the liver, or more directly from the gall bladder, the diaphragm or abdominal muscles in the vicinity are invaded, and the process in its extension destroys the ribs, forming a perceptible subcutaneous nodule. In two such nodules the striking thing was the amount of young fibrous tissue and the absence or scarcity of epithelial cells within it. This is possibly due to the necrosis and absorption of the malignant cells owing to the poorly developed vascular supply. In No. 32 this necrosis is specially evident in the greater part of the mass in the liver, the living and active tissue being at the periphery. The involvement of the omental fat shows the true invasive character of the growth, and here the cells have entirely lost their tendency to associate in tubule formation. It will be seen that there were no distant metastases in any of the cases. The absence of distant metastases and the spread of the process by mere continuity of tissues are quite usual features in carcinoma of the human gall bladder. The metaplasia of the lining columnar epithelium into squamous epithelium, a form more suited to withstand mechanical irritations, seen in two of the cases, is a not uncommon finding in chronic cholecystitis and in carcinoma of the gall bladder in the human subject.

No difference could be found between the solid foreign bodies in respect of the lesions they produced: they were equally effective. The fact that pebbles produced the same results as the gall stones shows clearly that the chemical composition of the calculus plays no part in the process. They supply a purely mechanical stimulus to the cells. The fact that sterilized pebbles and sterilized pitch pellets brought about the malignant proliferation just as readily as the unsterilized gall stones demonstrates that the effects of the latter were not due to any living virus they contained; and the fact that lanoline, soft and incapable of causing repeated cell trauma, did not induce exuberant proliferation would seem wholly to negative the suggestion that some mysterious cancer-producing agent was unwittingly introduced from without when the foreign bodies were inserted into the gall bladder. There still remains the assumption that the action of the solid foreign bodies resulted only in the production of a pathological condition of the tissues of such a nature as to allow of the operation of some other causal agent for the cancer. "Cancer"—so the fatuous platitude runs—"never starts in healthy tissues." As in our previous experiments in cancer production so also in this, the evolution of the stages of the lesions is so gradual that it is impossible to find a point at which we could conceive of one causal factor giving place to another of a different order. Here we have a species of animal in which neither a carcinoma of the gall bladder nor a carcinoma of any kind has ever been found in nature, and yet, when we expose a certain tissue to a mechanical irritation to which that tissue has never been previously subjected, carcinoma results. Are we to imagine that the tissues of the guinea-pig are never subjected to irritations of any kind, and that no condition suitable for the hypothetical agent of cancer is ever produced in them naturally? Are we to imagine that this undiscovered agent lurks in each guinea-pig's body and has never before had an opportunity of producing cancer until we introduced solid foreign bodies into a certain viscus? The simplest explanation, and that which will probably appeal to most of us, is that the constant mechanical irritation of the calculi, operating on a suitable tissue, such as the gall bladder proved to be, alone produced the carcinoma.

CONCLUSION.

From these experimental results we may conclude that, in the human subject, gall stones are capable of causing cancer of the gall bladder. Freely admitting that they do so in a comparatively small proportion of cases, we may premise that in some individuals there is a natural resistance to carcinogenic agents, just as there is a natural resistance to pathogenic organisms, and, learning from our previous experiments that similar tumours may be produced by wholly dissimilar agents, we may account for the carcinomata of the gall bladder which are found in the absence of gall stones as being due to some other causal agent or agents not yet identified.

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THE TREATMENT OF PERNICIOUS VOMITING IN PREGNANCY BY GASTRIC LAVAGE AND CARBOHYDRATE RECTAL FEEDING.

BY

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VARIOUS views have been put forward as to the cause of the morning vomiting of pregnancy, which occurs from the sixth to the fourteenth week, and is more common in primigravidae than in multiparae. It usually occurs in the early morning, and where the condition becomes aggravated it occurs throughout the day. In the severest cases it may become almost continuous.

The views that have been held include as causes toxaemia, hysteria, and a reflex type. The view that it is due to a deficiency of glycogen in the maternal liver was put forward by Duncan and Harding in 1918, and the case given below was treated in accordance with it.

Mrs. H., aged 27, eight weeks pregnant, was admitted to the Hull Royal Infirmary on November 4th, 1923. Her last period had been on September 7th. She had been vomiting for three weeks, first after breakfast, then after every meal, then all day, and latterly all night, at short intervals. On the date mentioned she had been vomiting every half-hour. The vomit was green, contained mucus, and some specimens digested blood also. The pulse was 88, temperature 99.8°; heart and lungs normal, abdomen rather retracted; nothing abnormal was felt. The tongue was clean. On vaginal examination the os uteri was found soft and enlarged, corsistent with two months' pregnancy. Urine: specific gravity 1030, acid, no albumin, no blood, no pus, no bile, no diacetic acid or acetone present. The blood was examined by Dr. Adamson, honorary pathologist, for the blood sugar content, which was found to be normal (0.095). The patient was very exhausted and was suffering from lack of sleep, not having slept for two or three nights owing to the almost continuous vomiting.

Treatment was started at 3 p.m. on November 4th by gastric lavage with sodium bicarbonate solution (1 drachm to the pint), one or two pints being used. Rectal salines, with half an ounce each of sodium bicarbonate and glucose to the pint, were administered, 1 pint every four hours. Solution of adrenaline, 5 minims hypodermically, was ordered every three hours for four doses or until the vomiting ceased. She was not to be awakened for the rectal salines. The end of the bed was raised by putting blocks under the lower end. A hypodermic injection of morphine 1/6 grain was given at 8.15 p.m.

On November 5th she was ordered 5 minims of the adrenaline solution every six hours, and rectal salines with no sodium bicarbonate but with glucose every four hours. Water was given by the mouth in small feeds; at 10 a.m. gastric lavage with saline solution and sodium bicarbonate 1 drachm to the pint, followed by saline solution only. Water was given at first in 1-drachm feeds every half-hour or hour, and slowly increased. The rectal salines were continued every four hours with 1 oz. of glucose and 2 drachms of sodium bicarbonate added to the 4 p.m. rectal saline. To the 6 p.m. and 10 p.m. salines 30 grains and 20 grains respectively of potassium bromide were added.

She vomited three times in the night, but the vomit was no longer bile-stained. Gastric lavage was performed at 10 a.m. on November 6th, and feeds of water increased to 2 oz. every two hours. On November 7th she was kept on water, 5 oz. every two hours, and rectal injections every six hours with sodium bicarbonate. Glucose was then added to the water by mouth in the proportion of half an ounce to half a pint. On November 8th and 9th the same procedure was followed and the vomiting stopped. On November 10th jelly was given, and on the 11th thin Benger's food; on the 12th there was slight vomiting after the Benger's food, but not otherwise. On November 13th beef-tea and bread-crumbs were given as well as weak tea and condensed milk. On the 15th there was a slight quantity of acetone in the urine, but this disappeared on the 16th, and she was put on fish, eggs, etc. On November 20th she was given lactogen as breast milk was deficient, and on the 23rd she was given chicken. The vomiting stopped on November 8th, four days after admission, except on one or two occasions, when she had slight vomiting on increasing the diet.

In any case of severe vomiting in a pregnant woman such conditions as gastric ulcer, or other gastric disease, cirrhosis of the liver, cerebral tumour, pernicious anaemia, phthisis, etc., must be excluded. It is possible that there may be a combination of causes or that the principal cause is aggravated by others. Assuming that the chief cause is lack of glycogen in the liver, due to a short period of starvation which lowers the glycogen content of the liver, vomiting may be accelerated if the patient is of a neurotic type, or if there is a relative toxaemia of the bowel, due to constipation. The treatment of such condition can be carried out by putting the patient on frequent small meals.

Summary of Treatment.

The essentials of treatment in cases of pernicious vomiting in pregnancy should be:

1. Rest in bed.
2. Gastric lavage, with solution of sodium bicarbonate 1 drachm to the pint, one or two pints being used.
3. Solution of adrenaline, 5 minims hypodermically every three hours for a few doses until the vomiting ceases, or the adrenaline solution may be given by the mouth in doses of 10 to 20 minims in a little water. It will be found that this drug is very efficient in stopping many kinds of vomiting.
4. The omission of all feeding by the mouth, at first, and feeding by rectal salines containing from half an ounce upwards of glucose to the pint, with a small quantity of sodium bicarbonate added if there is any diacetic acid in the urine.
5. The addition to the evening salines of 30 grains of potassium bromide to help sleep and reduce irritability of the nervous system.
6. The gradual increase in feeding by the mouth, beginning with small feeds of water as described above.

In cases of vomiting of pregnancy which are seen by the physician as they are getting more severe it will be found that treatment by administration by the mouth of solution of adrenaline in doses of 10 minims of 1 in 1,000 solution added to 2 drachms of water at three to six hourly intervals, will in many cases be sufficient to stop the vomiting. The diet at the same time should be light and given at short intervals. The above treatment by lavage and rectal salines should be reserved for the more serious cases, or to those which do not respond to treatment by adrenaline.

PNEUMOCOCCAL POLYARTHRITIS.

BY

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IN view of the grave plight on admission, and for some time after, of the patient whose case is here related, and in view also of the fact that treatment was limited to the subcutaneous injection of antipneumococcal serum, the rapid improvement in the general health and the arrest of the tendency to suppuration of the joints must apparently be credited to the curative effects of the serum. The immediate effect of the treatment was evidently to kill off the colonies of pneumococci originally present in the synovial effusion in such wise that on a second examination of the fluid no pneumococci were present.

On March 5th a man, aged 25, a marine engineer, was sent to the hospital with a diagnosis of "rheumatism." He stated that three days after sailing from Kurrachee (India) he had an attack of diarrhoea which lasted about a fortnight. He had as many as twelve motions in the twenty-four hours; they were scanty and sometimes blood-stained. He lost much weight. Three weeks after cessation of the diarrhoea the left knee began to swell and caused sufficient pain to prevent sleep. That was when he was at sea, four days before admission.

On admission his left knee was much enlarged, owing apparently to thickening of the periarticular structures; little or no fluctuation could be made out over the joint. Movement was extremely limited and very painful. The ankle and dorsum of the foot on that side were oedematous. The temperature was 100° F., the pulse 130. The heart and lungs were healthy, the spleen was not enlarged. He was thin, but this, he assured us, was only since he had fallen ill. He said he had had a urethral discharge some weeks previously, but on discussing the matter with him there did not appear to be any valid ground for suspecting gonorrhoea. In any case, the urethral mucosa was normal in appearance, there was no undue moisture, and no trace of the gonococcus could be discovered on bacteriological examination.

Extension applied to the limb by means of weights afforded the patient great relief. As there was a possibility, however remote, of a gonococcal origin he was given three injections of a product known as neo-dmegon (an antigonococcal vaccine), whereupon the temperature, which had fallen to normal since the patient had been resting in bed, again rose to 100°.

During the next few days he lost ground. There was atrophy of the thigh muscles, most marked on the left side. He had no

appetite, he complained of night-sweats and was rapidly losing flesh. On March 17th the right knee was swollen and soon became greatly distended, and there was pronounced fluctuation. The swelling was not accompanied by pain. Salicylates, 4 grams a day, had no effect.

On March 20th I asked our surgeon, Dr. Pelissier, to see the patient with me. On his advice the left knee was punctured and some pale yellow fluid withdrawn by aspiration. It contained numerous flakes, pointing to the imminence of suppuration. Dr. Lemaire reported that it contained 95 per cent. polynuclear leucocytes, staining well (no karyolysis), and very numerous pneumococci, intra- and extra-cellular. No tubercle bacilli were present. The urine, at first faintly acid, later on became neutral; no albumin was present. On March 23rd the patient complained of his right elbow, which was beginning to swell. It was not thought desirable to perform arthrotomy of the knee-joint, Dr. Pelissier being of opinion that in suppuration due to the pneumococcus operative measures should be had recourse to as late as possible.

In view of the bacteriological report we gave him daily injections of Dr. Minet's antipneumococcal vaccine, together with 20 c.cm. of the antipneumococcal vaccine prepared by the Pasteur Institute. No vaccine was given on March 25th and 26th, but the daily dose of serum was raised to 40 c.cm. This was injected under the skin on the outer aspect of the thighs.

On March 30th the right knee was again punctured and some fluid withdrawn. This time it was quite clear and free from flakes. The bacteriological report was to the effect that no pneumococci were present.

Between March 27th and April 2nd the patient was given a daily dose of 20 c.cm. of the serum, but in spite of the administration of calcium chloride and adrenaline he suffered a good deal from serum reaction: urticaria, arthralgia in all the joints, especially in the shoulders, hard oedema where the serum had been injected, and so on.

At this stage it could be seen that the swelling of the knees was diminishing and the patient's general health improving. The appetite was returning, he was in better spirits, and was feeling more comfortable apart from the serum manifestations. The temperature had returned to normal and remained there, he was putting on weight, and by the middle of April he was able to get up and walk a little, though he felt very weak on his legs. He was ordered massage and passive movements, and the stiffness of the joints gradually lessened.

His pulse remained very rapid (130), though the heart sounds and cardiac rhythm were normal. Blood pressure 125 maximum, 90 minimum. The tachycardia was greatly influenced by tobacco, so that though he only smoked in moderation he was advised to drop it for the time being. Thereupon the pulse fell to 90. The feet and legs became very oedematous towards evening. He was discharged for the return journey to England on May 22nd.

I am sorry it did not occur to me to have recourse to haemoculture, which might have afforded interesting information. In another case of the kind I should feel disposed to inject some serum into the inflamed articulations; though in this particular instance no time was lost in consequence of our not having done so, inasmuch as the joint trouble began to improve directly we started injecting the serum. Even so, the case presents considerable interest in view of its differentiation from gonorrhoeal arthritis on the one hand and from tuberculous arthritis on the other. On a correct diagnosis depended the success of the treatment.

Judging from statistics of polyarticular pneumococcal arthritis, the case would in all probability have had a fatal termination but for the bacteriological diagnosis; hence the importance of such examinations in all cases of arthritis not obviously rheumatic in origin—that is to say, cases in which the patient's antecedents are confirmed by the action of the salicylates.

Pneumococcal arthritis, though not very common, has been recognized for many years. In most instances it is secondary to pneumonia, but it also occurs independently of any other pneumococcal lesion, and arthritis in patients suffering from pneumonia is not necessarily due to the pneumococcus. It is met with most frequently in children. Dr. Gasne[1] reports 52 cases of pneumococcal arthritis—33 during the first twelve months of life, 8 between 1 and 2, 8 between 2 and 7, and 3 between 7 and 15. In 35 the affection was monarticular and in 17 polyarticular, the bigger joints being mostly attacked. Death occurred in 16 of the 52 cases.

Bulkley[2] collected 173 cases, mostly in children. In 70 per cent. it was associated with pneumonia. Three-quarters of the cases were monarticular (83 times the knee, 41 the shoulder, 23 the hip, 22 the wrist, 20 the ankle, 18 the elbow, and 12 the sterno-clavicular articulation). Suppuration took place in 147 of the cases, while in 15 the effusion was serous.

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ACUTE POISONING BY FUMES FROM CELLULOSE ACETATE.

BY

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DURING the late war many chemical substances were prepared, or brought into industrial use, almost for the first time, as belligerent necessities arose. Some were found to possess highly toxic properties which, little suspected at the outset, proved to be the cause of many cases of grave illness, prolonged ill health, and even, in some instances, death. Among them I would name trinitrotoluene and cellulose acetate. The latter is extensively used as a varnish for aeroplane wings. It is a mixture of benzine, acetone, methylated alcohol, and tetrachlorethane, forming a colourless liquid which gives off a heavy pear-like odour.

Sir William Willcox first drew attention to the connexion between many cases of serious icteric illness and the use of cellulose acetate in some of the large aeroplane factories. The results of his investigations, both clinical and chemical, were published in 1915. He found that after the early symptoms of headache, vomiting, and debility had become established, jaundice supervened. *Post-mortem* examination in fatal cases revealed an acute toxic hepatitis closely resembling acute yellow atrophy. With this was associated parenchymatous degeneration of the kidneys. He added that the tetrachlorethane alone, in addition to being a tissue poison, is a narcotic 2.8 times as powerful as chloroform.

Since the danger has been appreciated fewer cases of cellulose poisoning have occurred, owing to the special precautions now exercised in aeroplane factories. But quite recently a communication was published advising the use of this cellulose acetate for making encasing splints for limbs and joints, etc. As a result of this publication a doctor in this neighbourhood put up a child's knee in a splint of this construction. I am indebted to him for the full particulars given below as regards the serious poisoning which followed. I was asked to see the child in consultation about 3 p.m., when, I am glad to state, consciousness was slowly returning. The patient presented the appearance of just coming round from a general anaesthetic.

The patient was a female, aged 3½ years, with disease of the right knee-joint. On July 7th, 1924, at 11 a.m., cellulose acetate (solutions Nos. 25 and 26) was applied to the right leg by the technique advised by Dr. Fernandez. Half an hour later the patient was returned to bed and ate a good dinner. The leg was propped up and exposed to the air, the patient lying on her back; she was placed in the open-air ward. At 3 p.m. she vomited, and she continued to vomit every few minutes until 11.30. Shortly after she began to vomit she became cyanosed (lips and cheeks). Pulse 136, feeble, at times hardly perceptible; respirations shallow, average 36; temperature 96°.

At 4 o'clock she became unconscious. The splint was removed, and the cyanosis was replaced by pallor. At 4.30 1½ pints of saline with sodium bicarbonate were given by the rectum; most of it was retained. At 5 o'clock the temperature was 98°; the pulse had improved—still rapid, but stronger; her colour had improved; lips red. She was still unconscious, with large equal pupils which did not react to light. Her breath smelt strongly of acetone. At 6 o'clock the bowels acted—stool normal; general condition unchanged. At 7.30 consciousness began slowly to return; she complained of headache. Temperature 99°, pulse 136, respirations 36. At 11.30 the patient appeared to be much better; she vomited slightly and then went to sleep, and slept all night.

On July 8th, at 10 a.m., the patient appeared to be almost normal: temperature 98.4°, pulse 120, respirations 30. The pupils were normal and reacted to light. The skin of the leg was red, inflamed, and blistered over the area covered by the cellulose acetate solution; this in spite of the fact that before application the skin was covered with a layer of vaseline an eighth of an inch thick, before being covered with layers of vesting, on top of which the solution was applied to layers of bandage. At 5 p.m. examination of the urine showed: a sediment of urates, specific gravity 1020, acid, colour normal, no albumin, a considerable amount of acetone, no diacetic acid, no sugar, no blood.

Fourteen days after the above narrated incident the patient showed no signs of jaundice or other complication. But I think it is well that these facts should be brought to the notice of the profession as a warning against the use of this preparation. It nearly caused a catastrophe of a particularly distressing nature.

British Medical Association.

PROCEEDINGS OF SECTIONS AT THE ANNUAL MEETING, BRADFORD, 1924.

SECTION OF DERMATOLOGY.

J. M. H. MACLEOD, M.D., F.R.C.P., President.

PRESIDENT'S OPENING REMARKS.

THE PRESIDENT, in opening the proceedings on July 23rd, said: I am deeply sensible of the honour conferred upon me by the Council in inviting me to preside over the meeting of this Section, but in accepting it I could not but feel weighed down by the burden of the responsibilities attached to the office. To some extent these have been mitigated, as I have received from the head office a memorandum for officers of Sections, in which it is clearly stated that the President of a Section is not expected to give an address—a regulation to which I gladly conform. Before opening the proceedings I should like to remind you that the last time there was a Section of Dermatology was at the meeting in Glasgow in 1922, and that since then we are the poorer by the loss of three distinguished colleagues, active members of this Association, and former Presidents of this Section—namely, Sir James Galloway, Dr. J. J. Pringle, and Sir Malcolm Morris, men who spent their lives in the service of their fellows, and who did so much to advance our knowledge of skin diseases and to establish dermatology as an important branch of medicine. The programme for this meeting has been drawn up with considerable care by your officers, the subjects chosen for discussion being of special interest at the moment, not only to dermatologists but to the whole profession. These discussions, the group of interesting papers which we have been fortunate in obtaining, and the demonstration of cases, will fully occupy our time. I hope all of you will combine with me in making our meeting a pleasure and a success, and that you will take part in the discussions, not so much in a formal way as in a spirit of friendly criticism and good fellowship.

DISCUSSION ON THE CANCEROUS AND PRECANCEROUS CONDITIONS OF THE SKIN.

OPENING PAPERS.

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THE exact pathology of the malignant growth generally called rodent ulcer, and its relationship to squamous-cell carcinoma, has given rise to a considerable literature and provoked much discussion. The majority of dermatologists favour the view that the two forms of growth are distinct and separate varieties of cancer, and, although they may not be in complete agreement as to the mode of origin of each type of neoplasm, the hypothesis most generally accepted is that the one arises from the basal, the other from the prickle-cell, layer of the epidermis.

There are many facts to be obtained from the study of these two apparently dissimilar types of new formation which can be used to throw doubt upon the truth of this doctrine, and it will be the object of this paper to show that baso-cellular and spino-cellular epitheliomata are identical, the rate of growth governing the type of cell formed. Or the hypothesis may be expressed in a different way, as follows: where the growth is slow, small cells resembling those of the basal layer are produced, and where more rapid, there result large cells with more abundant cytoplasm, having an appearance similar to those of the prickle-cell group.

It should particularly be noted that this statement refers to the common primary carcinomata of the skin, and expressly excludes the similar new growths arising in mucous or semi-mucous membranes, because, as will be pointed out later, the malignancy of mucous membrane growths is relatively much greater. It would appear, indeed, that the reputation of the prickle-cell group depends upon the inclusion within it of the carcinomata arising on mucous membranes—a type, indeed, with similar histological features, but differing widely in its clinical course.

Jacob,[1] a Dublin surgeon, was the first investigator to call attention to the condition we now name rodent ulcer. In his paper he stated that the characteristic features of the disease were its extraordinary slowness of progress, the peculiar character of the surface and edges of the ulcer, the comparatively inconsiderable suffering caused by it, its incurable nature except by extirpation, and the fact that contamination of lymphatic glands was not found. He further asserted that it was not a genuine form of cancer. The views expressed in this original paper came in time to be commonly accepted as the standard opinion of dermatologists in this country.

In seeking to prove the identical nature of the basal- and prickle-cell growths it is not necessary to deal specifically with all the characters adverted to by Jacob. Certain of them, with other accepted attributes of this form of disease subsequently added by various observers, demand special consideration. These several points may be considered under headings as follow:

1. *That rodent ulcer is usually confined to the face.*

This statement will still be accepted in its general form. It is of some importance to notice that exceptions are met with on practically every part of the cutaneous covering of the body. Their existence disproves theories put forward to explain the origin of the growth in certain embryonic structures or along the distribution of particular nerves.

2. *That rodent ulcer begins at an earlier age than other forms of cancer.*

This assertion, made on the authority of Dubreuilh and Auché,[2] would, if it were true, succeed in placing the new growth in a special category, and by this feature separate it from all other forms of cancer. The statement is not absolutely true, as the following facts will show. Thus in 39 cases of rodent cancer an estimate could be made of the age at which the disease commenced, and this was found to give an average of 53.7 years.[3] The average age incidence in a large number of cases of cancer of the breast studied by Beckton was identical—namely, 53.7 years.[4] For the cervix 46.15 years was determined (MacCormac[5]), and for the rectum 52 years (Colwell and Woodman[6]). These figures represent the results of statistical investigations based upon material in the cancer department of the Middlesex Hospital, and may be accepted as reasonably accurate. They dispose of the assertion of Dubreuilh and Auché, and further show that rodent ulcer in respect of its age incidence corresponds to cancer in general in being a disease of individuals past middle life.

If comparison be made with the age of incidence of the rodent or basal and the prickle-cell type of epitheliomata when it affects the skin, it will be found that they are in close agreement. In 21 cases of the latter the average age of onset was found to be 51.5 years. This lies within the range of 53.7 years, the figure arrived at in the series of cases of the rodent type quoted above.

3. *That in rodent ulcer glandular and visceral metastases do not occur.*

It is important to examine the exact bearing of this statement on the subject under discussion. It is, in the first place, only relatively true, for proved exceptions have been recorded in medical literature. The following three may be quoted:

C. F, Beadles's Case.[7]

The patient, a man aged 46 years, presented a rodent ulcer of fifteen years' duration affecting the right lower eyelid. The margin of the growth was hard and livid; partial cicatrization of the central part had taken place. The ocular conjunctiva remained healthy. A round nodule the size of a hazel-nut was found at the anterior edge of the sterno-mastoid muscle on the right side.

The primary disease finally began to make rapid progress, and the patient died of septic pneumonia following a haemorrhage from the growth. The autopsy showed a large ulcer extending widely into the tissues. Under the microscope both primary growth and the cervical nodule presented the appearances typical of rodent ulcer.

Fordyce's Case.[8]

An example of multiple tumours of the basal-cell type arising on psoriatic patches. The patient subsequently developed metastases in the mediastinal glands and internal organs and died of carcinosis. The tumours were made of small deeply staining cells with scant stroma and numerous foci of degeneration.

The following, taken from the Middlesex Hospital, may also be quoted in this connexion: The patient, a woman aged 63 years, developed an "ulcer" on the back of the neck, gradually increasing in size during fifteen years and extending both laterally and deeply. *X* rays had been used in treatment during a period of sixteen months. At the *post-mortem* examination there was found, in addition to the primary growth, a nodule the size of a walnut on the lower surface of the right lobe of the liver. Microscopically the growth, both primary and secondary, was of the indeterminate type, one where it is difficult to decide whether the classification should be basal or prickle. It was certainly not a variety of *x*-ray cancer, and in its clinical and microscopical features came within the "rodent" group.

These cases, or at least the first and second, may be taken as proof that in certain circumstances growths of the rodent type are capable of forming metastases. The fact that they rarely do so is, however, no sufficient proof that basal-cell carcinoma is essentially different from the prickle type. If we accept the argument that the basal is only a slowly growing, and therefore relatively a less malignant, form of cancer, then we would expect less chance of dissemination, as is in fact the case. The basal and prickle can thus be regarded as each occupying positions at the end of a scale between which intermediate stages exist, with corresponding clinical and histological characters. Nor, indeed, contrary to the general belief, do prickle-cell cancers of the skin readily form metastases, as an examination of the following series—from which all mucous membrane lesions have been excluded—will demonstrate.[3] They consist of 22 cases with a distribution as follows:

Cheek	6 cases	Neck	1 case
Eyelid	3 ,,	Thumb	1 ,,
Nose	2 ,,	Finger	1 ,,
Temple	2 ,,	Abdomen	1 ,,
Leg	3 ,,	Vulva	1 ,,
Brow	1 case		

Enlargement of lymphatic glands implying metastases was noted in 6 instances only, in 3 of which microscopic examination was made. All were free from malignant deposit, one being tuberculosis. Four of these 22 cases arose on patches of lupus vulgaris, and may have been, but were not necessarily, examples of *x*-ray cancer.

E. S., aged 64. The growth began on the left lower eyelid, was operated upon and recurred, gradually forming a considerable cavity. Microscopically the primary growth was a typical prickle-cell carcinoma. At the *post-mortem* examination an enlarged lymphatic gland was found in the posterior triangle showing, under the microscope, giant cells and the general structure of tuberculosis. There were no metastases.

E. S., aged 65. A small "wart" formed on the abdomen, growing for seven years, eventually assuming the character of a rather foul ulcer the size of a two-shilling piece. An enlarged gland was present in the groin. The microscope demonstrated that the primary growth was a prickle-cell carcinoma, and that the gland was quite free from deposit.

P. J. P., aged 55. An ulcer on right leg for sixteen months, latterly painful; in the groin there were enlarged glands. Microscopically the ulcer was found to be malignant and of the prickle-cell type, and the glands quite free from contamination.

The series of 22 cases shows that glandular metastasis is by no means common in prickle-cell cancer of the skin. It is important to lay some stress upon this, because one of the chief distinctions drawn between basal- and prickle-cell growths is that the one (basal) never involves glands, while the other (prickle) frequently does.

Cancer of the skin of the abdomen is fairly often encountered in Kashmir as the result of kangri burns—a condition to which Neve[9] has drawn special attention. He states that glandular metastases are seen, especially in ulcerating types, but it is not clear from his accounts that microscopic examinations have been made to exclude inflammatory enlargement, a common source of error. There are also the well known examples of *x*-ray cancer with their tragic results. But even these exceptions, if admitted, do not disprove the general truth of the assertion that metastases are rare in both forms of primary cutaneous carcinoma. In this connexion it is curious to observe that dermatologists, when writing on the subject, generally illustrate the malignancy and liability to form metastatic deposit in prickle-cell cancer by examples taken from the condition when arising in a mucous membrane, as an examination of almost any textbook will show. This high grade of malignancy of the mucous membrane growths is to be explained on the vascularity of the structure in which they arise, the growth being better nourished and better supplied with the means of dissemination. In some degree such precancerous conditions as *x*-ray dermatitis partake of this increased vascularity, which may account for their greater activity.

An interesting paper has been contributed on the subject of occupational dermatoses of the paraffin workers of the Scottish shale oil industry by Dr. Alexander Scott.[10] He says, in treating of epitheliomata, that the lymphatic glands do not become involved until a late stage, but that this varies according to the situation of the original growth. No figures, however, are given to prove this assertion or to show what proportion of the enlarged glands are inflammatory. Further on a statement is made by the author that, in cases terminating fatally, death is as a rule due to extensive ulceration with exhaustion rather than to metastases—an assertion that is in accord with the views advanced here.

It might be expected that this subject would be illuminated by the experimental study of the so-called tar cancers in mice, but an examination of the literature on the subject will show that, although metastases are recorded, this aspect of the subject, as regards the relative incidence, is not very fully dealt with; and further, it will be observed that some of the neoplasms classified as carcinomata may be sarcomata, and, in any case where a carcinoma is produced there is a chance of a sarcoma also arising through the same agency. From an issue at present so confused no definite conclusions should be drawn.

Histology of Rodent Ulcer.

As the study of the histology of rodent ulcer has taken so prominent a part in the investigation of this disease, it is necessary to consider the subject in some detail. Writing in 1910, I classified the types of growth met with as pure rodent ulcers, mixed rodent ulcers, and an indeterminate type.

Pure rodent ulcer includes the majority of cases and represents the ordinary conception of the disease. In it masses of malignant cells of the small type are seen arranged in islands or trabeculae, sharply demarcated from the neighbouring connective tissue. At the edge of the growth there is usually found a row of columnar cells one or two deep. Mitotic figures may often be observed in the border, but are rarely met with in the main part of the growth. The appearance of a capsule of flattened connective tissue cells is frequent, and occasionally flattened—presumably malignant—cells occur within the boundary formed by the columnar cells. Cysts are rare, but may occur within the growth. Of 16 cases examined, ill developed cell-nests were observed in 3. In the neighbourhood of the new growth there is present a dense plasma-cell infiltration and the sebaceous glands show evidence of activity.

Into the indeterminate type fall certain rare growths where great difficulty is experienced in determining whether the neoplasm should be classified with the basal- or prickle-cell variety.

Mixed Rodent Ulcer.—In this group, a very important one, there are found, side by side and merging into one another, growths of the basal- and prickle-cell types. This combination was encountered three times out of 16 cases, and is therefore not uncommon. In two the basal- and prickle-cell growths seemed to be distinct, but in the third the arrangement was different. Sections of this growth showed a surface epithelium, beneath which there was seen a growth of the ordinary rodent type, and then, placed more deeply, a typical prickle-cell carcinoma; in many places it was easy to observe the transition of the one into the other, seemingly direct proof of the single nature of the prickle- and basal-cell groups.

The division of rodent ulcer into these groups is of more than academic interest: it has a bearing on the subject under discussion and it has also a practical application. The practical application lies in its relation to treatment, since we know by experience that the prognosis in rodent ulcer is good, for there the cells have assumed this form because of their slow growth and therefore relatively low degree of malignancy. Such cells are naturally more readily influenced by *x* rays, and even more surely by radium, as compared with the more active and so-called spino-cellular type, where such measures may even cause aggravation.

In a paper communicated to the Dermatological Section of the Royal Society of Medicine in 1922 on the primary new growths of the skin, Darier classified them under the three following heads: (1) spino-cellular group, (2) baso-cellular group or rodent ulcer, and (3) metatypic or spino-baso-cellular epitheliomata, further subdivided by him into mixed and intermediate forms.[11] This classification seems to be similar to that made by me, Darier's metatypic group corresponding to the mixed and indeterminate types.

Commenting on the spino-cellular growths, Darier observes that they form the most common (50 per cent.) and most malignant species, and that they are observed chiefly in the mouth, but also on the face, ears, body generally, and on cicatrices, ulcers, and lupus vulgaris. While Darier's facts are undoubtedly right, as he expresses them, they are so because he includes within his group the malignant growths of the mouth. But such are not cancer of the skin, and follow an entirely different clinical course. Where they are included with cancer of the skin, there is produced a false estimate of the degree of malignancy of the latter.

Many dermatologists believe that the presence or absence of epidermic fibrils—those delicate processes seen most characteristically uniting the cells of the rete mucosum—may be used, first to distinguish from each other the primary carcinomata of the skin, and secondly, to show, where they are present, that the growth has its origin in the prickle-cell layer and, when absent, in the basal-cell layer.

While it is generally asserted that these fibrils are absent from the basal layer in man, it would seem that this assertion is not entirely true. Thompson,[12] who has paid special attention to the point, concludes from his studies that prickles are found in the basal layer in certain animals, although not very distinct under normal conditions. He also states that they may be found in the basal-cell layer of human skin under conditions of increased cell activity.

When investigating this question, I examined 14 separate cases of rodent ulcer, staining the sections for fibrils by the Unna-Kromayer method. As this process is somewhat uncertain, no conclusions were drawn in any case unless prickles could be seen in the normal portion of the epidermis, thus demonstrating that the stain had acted effectively. I found, contrary to the general opinion, that prickles were often clearly seen between the cells of the basal layer in normal skin. In only one instance could I detect true fibrillae between the cells of a rodent ulcer growth. This was clinically a typical example of rodent ulcer, of nine years' duration, situated in the neighbourhood of the left lower eyelid; microscopically it showed the characteristic features of this variety of tumour.

It would thus appear that the deductions drawn from the absence or presence of prickles are fallacious, and it is interesting to note in this connexion that Dubreuilh and Auché go so far as to state that prickles are often present in rodent ulcer. It should perhaps be pointed out that what has been said above refers to true prickle cells without considering the irregular processes often seen between neighbouring cells, in appearance quite distinct from the genuine sheaves. These false prickles may obviously occur as the result of cell shrinkage in the preparation of the specimen.

An apparent spontaneous origin characterizes the rodent ulcer type of growth—that is to say, it usually appears on an area of skin where no pre-existing abnormal state has been detected. That the prickle-cell type can also arise in a similar manner is shown in forms clinically indistinguishable from rodent ulcer. It is recognized, however, that there are a number of what may be termed precancerous conditions, because they predispose the tissues to a malignant degeneration. They include, among others, chronic ulcer, lupus vulgaris, keratosis, scars, and *x*-ray dermatitis. It is a matter of common observation that the form of growth associated with them generally assumes the prickle-cell type. Some have held that a relationship exists between syphilis and cancer of the skin, a view that does not appear to have any support in clinical or pathological investigation.

Where cancer arises on a mucous membrane, syphilis does appear to have been a direct causal factor, as the following will show. Morson and I investigated the history and Wassermann reaction in 137 cases of carcinoma of various regions of the body, and we obtained evidence of previous syphilis in 21 instances, or 15.3 per cent.[13]

When these figures were further analysed it was found that the largest proportion of cases occurred in connexion with the mouth region, particularly the tongue. Thus, in 23 cases of cancer of the tongue we found evidence of syphilis in 6; in the lip, 1 out of 5; in the floor of the mouth, 2 out of 7; in the fauces, 1 in 3. Altogether, out of a total of 46 cases of carcinoma of the mouth region, evidence of previous syphilis was obtained in 10, making a percentage of 21.7. In the case of the tongue alone, as will be seen above, the percentage reached 26.08, or more than a quarter of the total number examined. A series of 13 cases of carcinoma of the cervix uteri was also examined; of these, in two instances we obtained evidence of previous syphilitic infection, making a total of 15.4 per cent. The number is too small to allow of any definite conclusion, but at least it suggests that in this variety of malignant disease specific infection may play some not unimportant part.

The study of malignant disease as it affects the mucous membrane of the cervix throws some additional light on the subject under consideration. An investigation into all such cases admitted into the general or cancer wards of the Middlesex Hospital during the quinquennium 1904-8 gave the following facts.[5] Out of 241 cases a *post-mortem* examination had been made in 107. Of this number, in only 48, or 44.85 per cent., was any malignant deposit present in glands or viscera; it should be noted that these findings were confirmed by subsequent microscopic examination. It might seem that this has no direct bearing on the subject of rodent cancer, but, as all who have had occasion to examine the microscopic appearances in carcinoma of the cervix will know, there is at times found a distinct resemblance to the basal-cell cutaneous growths, and in most cases in some part at least of the section masses of cells of the small rodent form will be met with. From what has been said this should indicate a lesser degree of malignancy, an observation confirmed by the statistical record.

Primary epithelioma may arise in three situations—the skin, the semi-mucous membranes, such as the lip, and the true mucous membranes, as the tongue. On a semi-mucous membrane the degree of malignancy is greater than on the skin, and higher again when the disease originates on, or spreads to, a mucous membrane. It is unfortunate, therefore, that in most cases where observations are made, a distinction is not drawn between these various clinical types.

An examination of the data recorded above seems to point to the fact that there is but one form of primary carcinoma of the skin, assuming the basal type when growing slowly and the prickle when in a more active phase; it is at times, indeed, impossible to distinguish one from the other except by the microscope. Nor does the presence or absence of demonstrable prickle cells serve to create two types of growth as has been alleged. Perhaps the most convincing evidence of the single nature of the two varieties is to be obtained from an examination of the mixed type, where both can be seen together merging one into the other. The clinical aspects of epithelioma, it is asserted, depend more upon their anatomical position than their histological type, and this is true even for the pure cutaneous growths, for there seems to be a clinical distinction between those arising about the scrotum and those elsewhere situated.

Two further observations may be made. First, that nothing that has been said should be taken as having reference to the melanotic growths. Secondly, that, although the terms "prickle" and "basal" have been employed throughout, this is not intended to commit the writer to any opinions as to the nature of the growth: these terms are merely retained as being a convenient form of nomenclature.

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II.—LOUIS SAVATARD, L.S.A.,

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LIKE Dr. MacCormac, I, too, had the good fortune in the days of my youth of being brought into intimate contact with cancer research. Some five-and-twenty years ago I was appointed clinical assistant to the Manchester Cancer Hospital, and there, under the able guidance of the late Professor Delépine and Professor Wild, I was encouraged in my work from both the pathological and clinical points of view. Later, under the stimulating influence of that brilliant dermatologist, the late Dr. H. A. G. Brooke, my teacher, colleague, and friend, I learnt to search the scriptures of dermatology and to prove all things.

Carcinomata of the skin may be divided into primary and secondary, primary growths arising in the skin itself and secondary growths being metastatic tumours of primary carcinomata elsewhere.

Primary growths may on histological and clinical grounds be classified as: (1) Squamous. (2) Basal. (3) Mixed—(*a*) MacCormac-Darier type; (*b*) squamo-basal; (*c*) transitional. (4) Naevo-carcinomata.

1. *Squamous Cancer.*

This may arise (*a*) on apparently normal skin, (*b*) on dermatoses which cannot be considered as precancerous, (*c*) on dermatoses which not infrequently become cancerous and are consequently spoken of as precancerous conditions of the skin.

The new growths arising on apparently normal skin may be of interfollicular or of follicular origin. They may be slowly or rapidly malignant, their malignancy often being dependent on their situation. The early epithelioma, which may be recognized when it is only the size of a small pin's head and of only a few days' duration, cannot with certainty be clinically distinguished from less malignant growths, nor can we foretell at this period how malignant the tumour may become; but the squamous carcinoma of two to three weeks' duration, when it may have attained the size of a pea, should be recognizable clinically. It is true that at this stage, and even at a much later stage, the lymphatic glands are not invaded, and this useful guide to differential diagnosis, on which (as Dr. MacCormac states, and to which I have elsewhere drawn attention) the textbooks lay far too much emphasis, is of little practical use. It is, however, of the utmost importance that medical men, if they are to prevent some of their patients suffering untold agony, ought to be acquainted, not only with the inoperable cancer so frequently paraded in textbooks, but with the initial lesion, the removal of which should be within the scope of the general medical practitioner.

The early epithelioma is the same colour as the skin, raised above the skin's surface, and it has a translucent appearance. Small blood vessels may be seen coursing over its edge, and its centre is often apparently plugged. The tumour at this stage is usually fairly hard and infiltrates the true skin. It simulates an early basal-cell carcinoma and is frequently mistaken for one, but this error should not arise when the rate of growth is considered, for an uncomplicated basal-cell growth as a rule takes two years to attain the size of a squamous-cell growth of two weeks (the exceptions I will mention later). It is not possible by ordinary pressure to extrude the "core" of the tumour, and so we can differentiate it from an epithelioma contagiosum. The absence of inflammatory signs should prevent its being diagnosed as a boil—a not uncommon mistake. With ordinary care we ought to be able to differentiate it from a sebaceous cyst, though its translucency has in some instances led to this error in diagnosis. Not infrequently it is stated that the cancer was preceded by a wart, pimple, scab, ulcer, crack, wen, blister, or lump. As a matter of fact these apparently benign lesions are frequently the initial stages of the new growth and not precursors of the cancer.

In dermatological practice the primary squamous-cell carcinoma is most frequently seen on the face, as also is the basal-cell carcinoma, but the epithelioma is not infrequently met with on the extremities and on the genital organs. The lower lip and upper lid are frequently invaded by the squamous and rarely by the basal type; the bridge and tip of the nose are relatively more frequently the sites of epithelioma than of the "rodent" ulcer; the scalp is rarely affected by either. With regard to the age incidence of (*a*) scar epithelioma, (*b*) basal-cell growths, (*c*) primary squamous-cell growths—the age being the age of the patient when the tumour was first evident—in one hundred cases of epithelioma of the face, and one thousand cases of basal-cell tumours of the face, the youngest patient in each condition was 17 years old. The basal curve reached its maximum at the 45th year, the squamous curve at the 65th year; almost as many basal growths began between 17 and 45 as between 45 and 80; squamous growths were frequently seen in young adults, and the scar cancer was a malignant growth of comparatively early age, was related to the age of the scar, and was independent of the age of the patient. I have referred to this precancerous condition here for convenience, but will mention it again later. You will see that my conclusions confirm those of the opener, though they are based on a far larger number of cases. If I may venture any criticism of Dr. MacCormac's statistics, it is that his numbers are rather too few on which to base reliable conclusions. We ought, I think, to work with hundreds rather than with dozens.

These early lesions were all excised and the diagnosis confirmed histologically. Some few years ago I found it difficult to get my clinical diagnosis always accepted when I showed the cases at our local Dermatological Society, and so provided sections. Now, however, these early cases are being more often seen because they are more frequently recognized. It is, I think, true that we in Manchester and Lancashire see a relatively large number of cases of skin cancer, and I shall endeavour to account for this later. In none of these cases were the lymphatic glands affected, and there were no recurrences after excision. Dr. MacCormac has referred to the comparative benignity of many squamous cancers of the skin. I am in entire agreement with him, and for this reason—that dermatologists usually see the earlier lesions, whilst the later lesions with glandular involvement come under the observation of the surgeon. In two fairly advanced cases, one showed no evidence of metastases; the other, though clinically not suggestive of any greater malignancy, soon developed malignant invasion of the pre-auricular gland.

Visceral metastatic growths are only occasionally met with. Nevertheless, I am of the opinion that the squamous cancer should be differentiated from the basal and other mixed forms of cancer, because its potential malignancy can never be foretold.

2. *Basal Cancer.*

Basal cancer may appear (*a*) on apparently normal skin, (*b*) on dermatoses which cannot be considered as precancerous, (*c*) on dermatoses which may be considered as precancerous. They may be solitary or multiple. They are most frequently seen on the face and often overlooked on

the trunk, though latterly these lesions (for the most part superficial and cicatricial) have been more properly appreciated and more frequently recognized. The whole surface of the skin of a patient presenting such a lesion on the face should be systematically examined.

The basal cancer has its origin in the basal cells of (*a*) the surface epithelium, (*b*) the hair follicle, (*c*) the sebaceous gland, (*d*) the sweat gland. At the present time it is not always possible to state with certainty by clinical inspection alone the situation of the cells from which they arise, but in many cases we can, and with further research we may attain greater proficiency. Many of the superficial tumours arising from the basal layer of the surface epithelium appear to have a perifollicular origin—that is, they appear to arise from basal cells of the surface in the neighbourhood of the hair follicle. The deeper and more indurated growths arise from the basal cells of the hair follicle and the scirrhous type from the basal layer of the sebaceous glands. I have, however, yet to meet with one which I could definitely state was of sweat gland origin, though such have been described.

The basal-cell carcinoma is multiform; clinically we recognize the following types:

1. Superficial cicatricial (Jacob's ulcer).
2. Hypertrophic.
3. Cystic.
4. Nodular and indurated.
5. Morphoeiform.
6. Pedunculated.
7. Scirrhous.

A very brief desciption of these varieties must suffice.

1. *Superficial Cicatricial.*—This arises as a small, translucent, fairly firm nodule with usually a depressed centre, simulating molluscum contagiosum; it spreads eccentrically, cicatrizing in parts, and leaving scattered nodules within an area (the surface of which often presents a rosaceous tint due to dilated vessels) bounded by a well marked raised gelatinous ridge. It is usually very slow growing, but may occasionally take on rapid growth, destroying all the soft tissues and invading bone (rodens terebrans); or it may, without extending laterally, produce deep cavitation with little external evidence. This variety constitutes the vast majority of basal cancers, and is usually described as a "rodent ulcer." Only to such a basal cancer presenting the clinical picture of a rodent ulcer should this name be applied. Many of the following varieties never ulcerate and never present a rodent tendency.

2. *Hypertrophic.*—The tumour presents a fairly firm mass raised well above the skin's surface with little tendency to infiltrate the true skin or to atrophy. Ulceration may not supervene for many years.

3. *Cystic.*—Cystic formation may take place *de novo;* on the other hand, the cystic masses, with their gelatinous contents, may be the result of degeneration in the cell masses.

4. *Nodular and Indurated.*—Sometimes the basal cancer (especially when arising from a hair follicle) appears as an indurated mass with much tumour formation, and little ulceration, deeply invading the true skin. This variety is often mistaken for a squamous cancer.

5. *Morphoeiform.*—Simulates a patch of localized scleroderma. It has a waxy, ivory-like appearance, with dilated capillaries ramifying over its surface. It may escape ulceration for many years. It is in my experience quite rare, and the majority of the cases I have seen have been on the forehead, though it may appear anywhere.

6. *Pedunculated.*—This is a still rarer variety. In a recent case which presented other varieties of basal cancers elsewhere the patient had what appeared to be a pedunculated fibroma just below the left gluteal fold. On examination we found it was a basal cancer.

7. *Scirrhous.*—The basal cancer of sebaceous gland origin presents a deep hard mass in the skin, simulating secondary invasion of squamous carcinoma. There is little tendency to ulceration.

Much has been written as to the sex incidence in cases of basal cancer. My experience is that the sexes are equally prone, whether the growth is solitary or multiple. For the purpose of this paper I carefully went through my last 300 consecutive cases and found there were 149 women and 151 men. There were 18 cases of multiple growths—9 in women and 9 in men. Of these 18, 6 had twelve or more tumours; the remainder had only two to six.

Metastases.—Dr. MacCormac has referred to three instances of metastatic growths in basal cancer. To these I would add three more: (1) one reported recently by Finnerud of Chicago; (2) a case of my own in which, though the rodent ulcer at the side of a man's nose yielded to treatment and remained soundly healed, there appeared six months later a large indurated mass adherent to the lower jaw which was undoubtedly secondary to the rodent ulcer; and (3) a case recorded by Powell White in a recent demonstration on cancer research in which a metastatic growth was discovered *post mortem* in the liver of a man who had suffered for many years from a large rodent ulcer in the left suborbital region. Though typical basal cells formed the mass of the new growths, parts of the sections showed some squamous cells, so that, strictly speaking, the growth was of the "mixed" variety. It is possible that the basal cancers in which metastases occurred were not pure but mixed growths.

3. *Mixed Cancers.*

Mixed cancers presenting on histological examination basal and squamous cells in varying proportions are not so rare as was formerly believed. Dr. MacCormac called attention to them some twelve years ago, and Darier has latterly emphasized this fact. I have divided them into three types:

(*a*) *MacCormac-Darier Type.*—A tumour beneath the left lower lid was of nine months' duration; it was rather too large for a pure basal and not large enough for a pure squamous growth. I therefore excised it, and found on examination an excellent example of a mixed cancer.

(*b*) The second type I have called *squamo-basal,* and I can best describe what I mean by the following case. A middle-aged man presented on the right side of his forehead a fairly large raised tumour, brownish in colour and firm to the touch. He stated that he had had a "mole" there for fifteen years, but that within the last few months it had extended considerably. I excised it, and found that rather more than half the tumour was composed of basal cells and that the basal growth had been invaded by a secondary squamous growth, from the overlying epidermis, presenting numerous cell nests—hence the cause of the recent extension. There were no metastases.

(*c*) The third type I have named *transitional*; it is represented by old chronic basal cancers which take on a more malignant rate of growth, and which on examination are found to have acquired a more squamous type of cell. An example of this kind I have already mentioned in Powell White's case.

There is still another variety of mixed tumour: it is usually met with on the scalp, and is known as a *cylindroma.* In some the basal cells predominate, and in others the squamous element is more manifest, but in all of them the stroma forms curious transparent cylindrical and oval masses of mucous degeneration which are found between the epithelial cells proper.

4. *Naevo-cancers.*

As the opener has ruled these growths as being beyond the scope of our discussion, I shall content myself with observing that they may arise on apparently normal skin, that they are not necessarily pigmented, and that the tendency of moles to become malignant has been grossly exaggerated.

Precancerous Conditions of the Skin.

A precancerous condition is one that will inevitably become cancerous. Is there such a condition? Is one justified in stating that any or the most likely condition will necessarily acquire malignancy? I think not. On the other hand, do not cancers apparently arise on practically all conditions of the skin? I have accordingly divided these so-called precancerous conditions into two groups.

1. Dermatoses on which cancers do rarely arise but which in themselves cannot be considered as conducive to malignancy. Under this heading I would include active lesions

of lupus vulgaris, lupus erythematosus, secondary syphilis, and psoriasis. I have seen the squamous variety only in cases of lupus vulgaris and lupus erythematosus, but in syphilitic and psoriatic patients I have had both squamous and basal cancers. In chronic psoriasis when arsenic has been administered over a prolonged period, it may have been the drug and not the psoriasis lesion which was responsible for the development. In one case of psoriasis under my colleague Dr. G. H. Lancashire, there was a carcinoma on an old lesion, but Dr. Jenkins, our histologist, reported that the tumour did not appear to be primary in the skin but a secondary growth. The patient was not seen again. Only last week I saw an old case of psoriasis in which many of the lesions had persisted for years, and some of the so-called psoriasis lesions appeared to be superficial basal cancers. I have not yet, however, had the opportunity of making a histological examination. Whitfield, many years ago, described the supervention of a rodent ulcer on a psoriasis lesion, and Gray has shown a similar case. I have not seen one so arise, but I have seen a few in conjunction with psoriasis. I have, however, had one case of a squamous cancer arising on a patch of psoriasis when arsenic had not been administered.

2. Dermatoses which not infrequently become cancerous. These may be classified into (A) congenital, and (B) acquired.

(A) *Congenital.*
- (1) Malformations—Naevi.
- (2) Dystrophies—Xeroderma pigmentosum.

(B) *Acquired.*
- I. Inflammations.
  - (1) Hyperkeratoses: (*a*) Seborrhoeic keratosis. (*b*) Horns. (*c*) Warts.
  - (2) Chronic ulcers.
- II. Physical agents.
  - (1) Exposure: Sailor's skin (Unna).
  - (2) Actinic rays: *X* rays and sunlight.
- III. Chemical agents (occupational): Tar, arsenic, paraffin, soot, etc.
- IV. Atrophic lesions: Biotripsis (Lenthal Cheatle), senile keratosis.
- V. Scars of lupus vulgaris, burns, syphilis, and lupus erythematosus.
- VI. Trauma.
- VII. Paget's disease (mammary and extramammary).

Time will only allow a very brief reference to the above conditions.

Naevi.—These growths are so universal and the incidence of squamous or basal cancers so extremely rare as hardly to justify their inclusion in this group. I have seen, however, a case of a pedunculated basal cancer arising on a linear naevus (acanthotic naevus).

Xeroderma Pigmentosum.—This condition, which is usually congenital though sometimes acquired, is, on the other hand, very prone to malignancy (especially of the squamous variety). I know, however, a case of many years' duration on which no suggestion of a cancer has yet appeared, and other similar cases have come under my observation.

Seborrhoeic keratosis is the fruitful source of multiple squamous cancers of the face.

Horns frequently show evidence of squamous invasion at their base, but whether the horn is secondary to the cancer or the cancer secondary to the horn I cannot say.

Warts.—Senile warts on the back of the hands (apart from senile keratosis) should be excised—many apparently benign are the precursors of squamous cancer.

Chronic Ulcers.—If care is not taken in cutting sections of the edge of a chronic ulcer one may get a picture very suggestive of carcinoma. In my experience the incidence of malignancy in simple chronic ulcers is extremely rare.

Sailor's Skin.—When a man's occupation has necessitated his being exposed over prolonged periods, whether on sea or land, to all sorts of weather, we not infrequently find the supervention of squamous or basal growths on keratosic foci, especially on the face and backs of the hands.

X Rays.—Unfortunately there is no need for me to emphasize the incidence of squamous cancer in *x*-ray dermatitis. Its frequency in recent years is well known to us all.

Sun's Rays.—Paul of Sydney states that the majority of rodent ulcers in Australia arise on keratosic lesions produced by the actinic rays of the sun. Though one sees such cases occasionally they are not so frequent here. Squamous cancers, too, may so arise. In a case which I have had under observation for many years the keratosic lesions occurred after the appearance of a basal cancer on the left cheek. Basal and squamous cancers developed later on these keratosic foci.

Chemical Agents.—There is little need for me to allude at length to what might be termed "trade cancers." It is so well recognized that workers with tar, arsenic, and paraffin are subject to "cancerous ulceration." Chimney-sweeps' epithelioma of the scrotum is now comparatively rare, but mule-spinners' cancer seems to have taken its place.

Atrophic lesions are usually seen in elderly people, and are attributed to senility of the skin—due to natural wear and tear of life. Cheatle has well described this condition under the title of "biotripsis." It is a condition which a busy dermatologist must frequently see. "Senility" of the skin is not confined to the aged, and many old people have not senile skins. On this atrophic skin flat papular lesions may appear, which may be smooth or may be covered with horny scales, and may later assume more marked keratosis, on which squamous or basal cancers not infrequently develop. The sites of election are on the temples and backs of the hands.

Scars.—On the scar tissue of lupus vulgaris squamous cancers are very prevalent, whether the lupus has been treated by *x* rays or not. Some twelve years ago I found that of fifty such cases 50 per cent. alone had had radiotherapy. Now, however, the proportion is much greater. I have never seen a basal cancer on scar tissue, though one simulated a rodent ulcer. I have referred above to the age incidence of these scar cancers, but before dismissing this sequela I would like to stress the importance of keeping all lupus cases under observation for years after apparent cure, and the necessity for removing any early keratosic papule which might appear on the resulting scar, as it will invariably be found to show malignant change.

Squamous cancers on the scars of lupus erythematosus do occasionally occur. Rarely one sees epithelioma developing on the scar of a primary syphilitic sore, and not infrequently on secondary syphilitic scars. The scars of burns often present, many years later, malignant tumours, and here, as in other scar cancers, the malignancy is not very rapid. In a recent case of my colleague's (Dr. Gibson) the new growth arose on the scar of a burn on the right elbow. The accident happened forty years ago. The epithelioma is of seven months' duration and is fairly extensive, but no enlarged axillary glands are palpable.

Trauma.—A few cases of epithelioma resulting from a single blow have been recorded by competent observers, but such require very thorough investigation. One frequently gets the history of injury, but on careful cross-examination it is found that the trauma was subsequent to a pre-existing pimple or that the blow was on the other side of the face.

Paget's Disease of the Nipple.

Much discussion has taken place with regard to this somewhat rare condition in relation to mammary carcinoma. No one would deny the frequency of the association of the two conditions, but to assert that malignant disease of the breast invariably supervenes on Paget's disease is incorrect. I have had three cases of long standing which were unassociated with malignancy. Powell White, too, in his recent demonstration, recorded a case in which a thorough *post-mortem* examination revealed no evidence of malignant disease.

Some cases of duct cancer which have ulcerated through the skin have been mistaken for Paget's disease. Many authorities consider this condition to be malignant *ab initio*, but to me its histology does not warrant such a conclusion. "Dyskeratosis," acanthosis, and cellular infiltration of the corium are present in many benign lesions, and do not necessarily signify a precancerous or cancerous condition. Some contend that the skin lesion is secondary to

cancer of the gland, but recently Lenthal Cheatle has very ably contested this view, and shows on histological findings that there is no such connexion. Cheatle, however, is of the opinion that Paget's disease and mammary carcinoma are the effects of the same cause. If we accept this view then we may look upon Paget's disease as a *para*cancerous condition.

Paget's disease of extramammary location is, I believe, of more frequent occurrence than the literature would lead us to suppose. Bowen's precancerous dermatosis is identical with this condition, but both require careful differentiation from the superficial basal cancers of the trunk. I have dealt with these elsewhere and will not now discuss the matter further.

Etiology.

I think we are all agreed that the outstanding etiological factor in the production of cancer is *chronic irritation*, whether the irritant be mechanical, chemical, or physical. Two areas of the face most liable to irritation, the inner canthus and the ala nasi, are the most frequent sites of origin of basal cancers, and the frequent sites of their incidence on the trunk are on areas irritated by seborrhoea or sweat.

On histological examination of cancers we are apt to confine our observations to the state and character of the proliferating epithelium, but the condition of the corium, especially in growths supervening on previous dermatoses, show marked degenerative changes. It is possible, too, that though the true skin in those cases in which the cancer develops on apparently normal skin may show no such lesions, yet the derma may have undergone some change prior to the invasion of the epidermal cells.

Manchester is the centre of a vast industrial population. Its atmosphere, like that of the neighbouring towns, is not free from chemical irritants. It is not therefore surprising that we should see a relatively large number of these cases of cancerous and precancerous conditions of the skin.

In conclusion I should like to express my thanks for much valuable assistance to Dr. Powell White, to Professor Shaw Dunn, and to his laboratory steward Mr. Southall (who has cut many of my sections and prepared the microphotographs), and also to my colleague Dr. G. H. Lancashire for allowing me to investigate many of his interesting cases.

[Dr. Savatard showed a number of microphotographs in the course of his paper.]

GENERAL DISCUSSION.

The President, Dr. J. M. H. MACLEOD (London), in opening the discussion, said that while he agreed with Dr. MacCormac that all stages of transition might be encountered between typical basal-celled carcinoma and squamous-celled epithelioma, the extreme ends of the group, it seemed to him to be inadvisable to neglect these distinctions, as they were of the greatest value in indicating the proper line of treatment. The basal-celled type was amenable to curetting followed by radium or *x* rays, while the squamous type should be excised. He also desired to draw attention to another useful histological indication of the degree of malignancy—namely, the type of cellular infiltration in the corium. He had found that where the infiltration was of the plasma cell type the malignancy was less than where it was of a more simple inflammatory type. The frequency of lupus carcinoma had increased considerably at Charing Cross Hospital since the employment of *x* rays in the treatment of lupus, and lupus epithelioma was really an epithelioma developing on an *x*-ray scar.

Sir NORMAN WALKER (Edinburgh) admitted that the name rodent ulcer was not a good one; in the early stages the condition was neither rodent nor an ulcer. He held that rodent ulcer began at an earlier age than was stated by some authorities. As to the origin of skin cancers, he believed that these carcinomata might arise from any of the epidermic cells. He had recently examined the statistics of his department for the last eighteen years and was rather surprised to find that rodent ulcer was almost equally common in the two sexes. He had previously supposed that it was commoner in males than in females. He had had a deplorable record of carcinoma following lupus in cases treated over twenty years ago by *x* rays, and questioned whether the use of that remedy was justifiable in that disease.

Dr. S. E. DORE (London) said that in his opinion a definite distinction should be drawn between what was universally known as rodent ulcer and squamous-celled carcinoma on account of the different clinical courses of the two conditions. It was not, however, always possible to distinguish between them without microscopical examination. He recalled four cases under his care which were clinically indistinguishable from rodent ulcer in which their failure to respond to radium treatment had necessitated excision of the growths, and these all proved to be prickle-celled carcinomata. Another case, diagnosed at first as rodent ulcer, perforated the malar bone and was rapidly fatal from extension of the growth. He thought that, failing a preliminary microscopical examination, response to radium treatment was an important distinguishing feature.

Dr. GOODWIN TOMKINSON (Glasgow) said that some years ago a patient who had suffered from psoriasis came under his care at the Western Infirmary presenting a large psoriasiform lesion on the back. A portion of this lesion suggested rodent ulcer, and although no histological examination was made he treated it, in accordance with his usual custom, with radium emanation. Presumably the diagnosis was correct, for the condition cleared up. It then appeared that some years previously a left mastoidectomy had been performed on this patient for what he said was "cancer." Moreover, after a considerable interval since the cure of the dorsal lesion, a typical early rodent ulcer had appeared on the right lower eyelid, which was excised. Dr. Goodwin Tomkinson considered this to be a particularly interesting case of multiple malignancy. He did not think that the initial lesion on the back was necessarily a precancerous condition. He pointed out that, happily, although all human beings possessed sweat and sebaceous glands, by no means all developed malignant growths of the skin. What, therefore, was the cause of the malignant tendency which appeared to exist in some skins? All dermatologists would agree that this malignant tendency was not the monopoly of those in middle and old age. Was the cause a congenital one?

Dr. RUPERT HALLAM (Sheffield) said that it was interesting to hear both speakers lay stress on the rare occurrence of metastases from squamous-celled carcinoma of the skin. This raised an important question—namely, whether these cases should be handed over to the surgeon for excision of the growth and also of the neighbouring glands. The speaker had sometimes found it difficult to persuade his surgical colleagues that small growths of merely a few weeks' duration were really epitheliomata and urgently required excision.

Dr. MACCORMAC, in his reply, said that his intention had been not to overload the terminology, but rather to simplify it. The age of onset in the series quoted was taken from the period of the earliest noted lesion, not from the time when the patient came under observation. There was admittedly a distinction between the so-called "basal" and "prickle" types, but from what Dr. Dore had said it was clear that it was at times impossible to distinguish them by their objective characters. It would therefore seem advisable to perform a biopsy before deciding upon the type of treatment. Although metastases were relatively uncommon in carcinoma of the skin, nevertheless it was proper to deal with the "prickle-cell" type by surgical measures, including the removal of any enlarged glands, reserving radium or *x* rays for the radio-sensitive "basal-cell" type. Dr. MacCormac added that he did not wish to drop the term "rodent ulcer," but that he was trying to prove that so-called rodent ulcer or basal-celled carcinoma of the skin was more closely allied and had more in common with epithelioma or prickle-cell cancer of the skin than was generally supposed.

BAKERS' DERMATITIS.

BY

ALLAN C. PARSONS, M.R.C.S., L.R.C.P., D.P.H.,

Ministry of Health.

UNTIL quite recently little had been heard of bakers' dermatitis in this country, and the textbooks of such authorities as Sequeira, Stelwagon, and Prosser White contained but brief references to this particular trade dermatosis. Towards the end of 1921, however, the Amalgamated Union of Operative Bakers became perturbed by the increasing number of their members who were receiving sick benefit on account of "bakers' itch," and asked the Ministry of Health if this disease could be officially investigated. Such an investigation was started early in 1922 under the joint auspices of the Ministry of Health and the Home Office. Information was sought from two main sources: (*a*) from bakers, millers, and caterers, and (*b*) from the dermatological clinics throughout the country. Personal investigations were also made in Liverpool, Manchester, South Wales, and other places where the cases were chiefly reported.

The contention of the Bakers' Union that bakers' dermatitis became unusually prevalent during the war and after is not supported by the medical evidence, which was not confined to dermatologists attached to hospitals, but was received also from certifying factory surgeons and general practitioners. The evidence from the Master Bakers' Association, from high-class catering establishments in London, and from the leading millers throughout the country was also negative. Field investigations showed, as several dermatologists had suspected, that the terms "bakers' itch" and "bakers' dermatitis" were loosely used, and probably not more than half the cases of dermatitis reported among bakers were cases of bakers' dermatitis. It is interesting to note that the alleged increase in this condition took place during the war, when skin affections generally, and particularly scabies, were unusually prevalent.

As regards distribution, most of the cases were reported from Liverpool, South Wales, and Newcastle; the remainder were distributed in Manchester, the West Riding of Yorkshire, Bristol, and Nottingham. Very few cases were heard of in London, and it was significant that in this city trade unionism is not nearly so highly developed among bakers as it is in Liverpool and South Wales. The majority of patients who were visited lived and worked in the humbler streets of Liverpool, Cardiff, and Newport. A more important fact is that in over 60 per cent. of the reported cases from all districts the patients at the time of their illness were working in bakeries where the dough was made entirely by hand, while in the great majority of the remaining cases the affected bakers were employed at the dough-mixer. With one or two exceptions the cases were confined to males, and most of the patients, when attacked, were approaching middle age.

By the union officials and by the affected bakers themselves many hypotheses concerning the exciting causes of bakers' itch have been put forward. In Liverpool the indifferent brands of flour used during the war were suspected; in Wales the refining processes used by millers were thought to be responsible; some blamed the yeast and others the powders used in the making of cakes. The fact that no cases of dermatitis were reported among millers helps to dispose of the suggestion that either the flour itself or some process used in its refinement was responsible; moreover, cases of bakers' dermatitis continued to be reported by the Bakers' Union after the flour had again become normal in quality.

Sugar was certainly a possible contributory cause in a high proportion of cases, and in a few single instances "cream powder" and salt were directly responsible. The evidence goes to show, however, that in most bona-fide cases of bakers' itch the eruption is usually caused by the mechanical irritation of the dough. Rarely it was found that certain elderly bakers, after a long period of immunity, developed a sensitization to flour protein. The eruption is usually seen on both upper limbs, and is limited to those parts which come in contact with the dough—namely, the hands, wrists, forearms, and the elbow regions as far up as the line of rolled shirt-sleeve. There may be patches behind the ears, while in severe cases of sensitization the whole body may become involved. A preliminary sensation of itching is followed by a vesicular erythema, and in untreated cases a general folliculitis supervenes sooner or later. Secondary infection may occur with the formation of suppurative dermatitis. In cases of some duration there develop patches of inflamed and furfuraceous skin, resembling certain forms of lichen or even psoriasis. The diagnosis, however, should rest chiefly on the history, the localization of the eruption, and the characteristic fact that when the patient gives up his occupation the dermatitis will, in most cases, disappear without further treatment. On the assumption that manual contact with dough is the usual cause of bakers' dermatitis, it may be assumed that with the substitution of machinery in bakeries the risks of bakers' dermatitis will correspondingly diminish. In the meantime there is a need for far better toilet facilities in those baking establishments from which cases of bakers' dermatitis are most commonly reported.

DISCUSSION.

Dr. MACCORMAC only rarely met with examples of bakers' dermatitis. In one case where the eruption seemed to be due to the salt used in baking he had advised the patient to wash and then apply olive oil. As a result there was marked improvement, although the individual had remained at work.

Dr. DORE had been struck by the relative infrequency of bakers' dermatitis in his department. One patient under his observation who was a baker in an infirmary attributed his dermatitis to yeast, but sensitization tests were made and he gave no response. He recovered as soon as he was removed from his work, and the condition had not relapsed. It was thought that salt might have been the cause in this and other cases.

Dr. H. C. SEMON referred to a recent case in which legal proceedings were being taken by the plaintiff's union against his employers. The patient was a journeyman baker, 29 years of age, and had been baking in other establishments without having any skin trouble to complain of. In January, 1921, an irritable dermatitis developed on the hands and forearms. His panel doctor attributed it to his work, which he gave up for a week or two, with the result that the lesions cleared up. On his return to kneading dough the dermatitis returned, but cleared up again when work was once more abandoned. This sequence of events had been repeated on three or four occasions during the last two years. Before his last attack his occupation had been changed, for he had been entrusted with the care of an incinerator for the destruction of debris, which was delivered to him in old flour sacks. Whether flour was the direct cause in this case or not was open to discussion, but it would appear that the appearance of the dermatitis after his change of occupation was an argument that it was. The case resembled that reported by Dr. H. W. Barber, in which the cutaneous sensitization test to wheat protein was positive. The speaker thought that the investigation of cases from this point of view by dermatologists would certainly be of value in the elucidation of the etiology and prophylaxis of preventable trade dermatoses.

Dr. R. A. VEALE was impressed by the increase in the number of cases of bakers' itch that had occurred in his hospital clinic during the last two or three years. He wondered whether any adulteration of the flour might be a possible cause. Common salt was often blamed. Treatment was often difficult and prolonged because the skin seemed to be sensitized so as to respond to other forms of irritant besides the original.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

SPONTANEOUS RUPTURE OF THE HEART.

DR. E. R. GILMORE's case (August 30th, 1924, p. 373) is in several respects similar to three I have seen within the past two years. All died suddenly and unexpectedly; in one case only was there even a suspicion of previous disease of the heart.

CASE I.

A retired merchant, aged 71, in the effort to get out of bed one morning complained of faintness and dizziness. His wife then noticed his pallor, but before she could get near him he had fallen on to the floor, cutting his right forehead; the wound bled only slightly. I saw him within a few minutes; he was dead. His wife stated that he had made no previous complaint of illness or pain.

Post-mortem Examination.—A stout, big, pale-skinned man with puffy appearance of face. The precordium was full of blood; this was carefully swabbed out and the heart found to be enlarged and fatty. A rough tear in the left ventricle extended downwards for about 1¼ inches (about half an inch in the aorta itself); and at its middle penetrated through into the ventricle. There was atheroma of the aorta, with roughness of its intimal surface; there was some thickening of the mitral and aortic cusps near their mural attachments.

CASE II.

A woman, aged 63, became sick and faint while finishing breakfast, and quickly collapsed. When seen, almost immediately, she was propped up, was practically pulseless, with sighing breathing and dilated pupils; she died within a few minutes.

Post-mortem Examination.—A spare woman who appeared older than her years. The pericardial sac was full of blood and was carefully swabbed out. The heart was somewhat enlarged and exceedingly fatty. There was a tear in the left ventricle which extended from the wall of the aorta downwards for about 1¼ inches, and in its lower half penetrated into the ventricle. The upper half of the wound was only partially through the wall of the aorta, and in it were older clots and some attempt at organization, the appearance being suggestive of a wound which had been weeping and at the same time attempting to heal for some days. The aortic wall was thickened but there was no palpable sign of disease in the valves.

CASE III.

D. C., a stout, plethoric woman, aged 70, fell forwards at the tea table and rolled on to the floor; she was found to be dead. About half an hour before she had hurried back from a walk on account of sudden abdominal pain and diarrhoea. She had complained occasionally of breathlessness on exertion for some months previously, but not of pain.

Post-mortem Examination.—The pericardial sac was full of blood. This was swabbed out and the heart was found to be enlarged and extremely fatty. There was a rough irregular tear in the wall of the left ventricle measuring about 1½ inches; it extended from close to the aorta downwards and penetrated the cavity of the ventricle about the middle of the tear. This tear involved on its inner aspect aorta and ventricle. The aortic and mitral cusps were thickened and the inner wall of the aorta was thickened and rough —evidently in a condition of fairly advanced atheroma.

All three cases showed advanced fatty disease of the heart with sclerotic changes in the aorta, more or less, and had died from the same cause. In each the wound was in the same area and ran roughly parallel with the interventricular septum, at an area where the wall was weakest or where it was subject to greatest strain.

To my mind the questions which present themselves in considering the above cases are these:

1. In rupture of the left ventricle does the tear usually occur from above downwards? In my second case it certainly did.

2. Was the exciting cause of the rupture purely mechanical and caused by a sudden temporary rise in blood pressure acting on a diseased ventricle wall?

3. Occurring near the left septal division of the auriculo-ventricular bundle, was it possible that a sudden abrupt commencing of ventricular fibrillation caused a wave sufficiently violent to start a tear?

I feel that the record of these three cases is incomplete; each examination was made in the hurry of things, and further detail could not easily be got.

Rupture of the heart appears to be a commoner mode of death in fatty disease than is generally believed.

Bournemouth. S. WATSON SMITH, M.B., Ch.B.Edin.

ECHINOCOCCUS OF THE HEART.

I WAS interested to read the memorandum (August 16th, p. 277) of a case of echinococcus of the heart. Some years ago in India a gunner, who had recently come up to the hills for short leave, feeling slightly out of sorts after dinner, went for a pony ride to shake it off. He was seen about an hour later leading the pony and feeling very sick; ten minutes later he was dead.

At the *post-mortem* examination the heart felt very tense, and on opening the left ventricle its cavity was found to be occupied by a cyst the size of a golf ball; there appeared to be no room for any blood.

A microscopical examination could not be made, but the macroscopic appearance of the cyst resembled echinococcus. There were smaller cysts in the brain and kidneys, but none in the liver.

The most remarkable feature of the case was the fact that the soldier had been playing football a few weeks earlier without distress. Probably the extra strain demanded by taking exercise in the hill station, which was 7,000 ft. above sea-level, caused failure in the heart, which had functioned normally in the plains.

Malta. C. M. FINNY, F.R.C.S., Major R.A.M.C.

NEUTRALIZATION OF INSULIN BEFORE INJECTION.

INSULIN injected subcutaneously nearly always gives rise to more or less pain of a stinging or smarting character, in addition to the slight pain necessarily caused by any subcutaneous injection of fluid. In some patients this stinging pain is so great that they dread the daily repetition of it.

As well as pain some patients have within a few minutes of the injection an erythematous patch, with heat and tenderness, spreading to two or three inches in diameter, lasting for one, two, or three days, and leaving an indurated nodule for quite a long time.

Insulin as at present prepared is very unstable except in a distinctly acid solution. Dr. O'Brien and Dr. Trevan, of the Wellcome Physiological Research Laboratory, suggested that this acidity might be the cause of the stinging pain and erythema. Dr. Trevan made a series of experiments with insulin the acidity of which had been neutralized at the time of injection by the addition of a sufficient amount of sodium bicarbonate, and found that insulin with its acidity neutralized in this way gave identical physiological reactions as similar doses of unneutralized insulin, used at the same time and under the same conditions.

He then very kindly supplied me with a 6 per cent. solution of sodium bicarbonate with 3 per cent. tricresol, sterilized by filtration through a Berkefeld filter, about 0.25 c.cm. of which is more than sufficient to neutralize 1 c.cm. of the preparation of insulin made by Burroughs Wellcome and Co. I have used the preparation thus neutralized daily for three weeks, and find that the smarting and stinging previously complained of have quite ceased, and also that the local erythema is no longer produced in a patient who previously suffered very severely from it. The physiological effect on the cases so treated has not been checked, but there is no reason to think that the potency of insulin used in this way is at all diminished.

It is important not to let the alkaline solution get into the stock insulin bottle; if the contents of that become alkaline the insulin will disappear on standing. The insulin should be drawn into the syringe first, then the alkaline solution with a bubble of air, the whole shaken until mixed, when the solution becomes slightly turbid, and the air expelled.

Beckenham. GEORGE R. STILWELL, M.B.Lond.

TWO CASES OF MUSHROOM POISONING.

ON account of the rarity of literature on poisoning due to eating *Amanita phalloides* fungi, the two following cases, which came under my observation recently, may be of interest.

Two officers ate what they considered to be mushrooms at 12.15 p.m. At 12.45 they began to feel ill at ease; they

complained of acute abdominal pain in the epigastric region, of pains in the bladder and penis, and a desire to micturate; they sweated profusely.

At 1.15 they were seen by me; their symptoms, in addition to those mentioned, were: vision extremely blurred, unable to distinguish any features of people around them; profuse cold clammy sweat, extremities quite cold; no pulse to be felt at the wrist; heart beats fast, weak, and very irregular; breathing fast and shallow. Both patients had a severe rigor and profuse salivation. The mentality remained clear.

The treatment consisted of a copious mustard and water emetic. In the vomit there were large quantities of the supposed mushrooms, which have since been identified as *Amanita phalloides* fungi. Atropine sulphate 1/100 grain was given hypodermically, and this controlled the perspiration and salivation to a certain extent. Digitalin 1/100 grain and strychnine sulphate 1/60 grain were then given hypodermically, followed by two ounces of brandy by the mouth.

The patients were put to bed in blankets and packed round by hot-water bottles. After an hour the vision became clear and the patients gradually improved till after five hours they had quite recovered. For about two days they felt slight abdominal pains, but these gradually passed away. The temperature remained subnormal throughout the attack.

Halton Camp, Bucks. F. J. MURPHY.

Reviews.

THE DIAGNOSIS OF NERVOUS DISORDERS.

IN the endeavour to keep pace with the continuous advances in neurology, Sir JAMES PURVES-STEWART has made many changes in his well known book on the *Diagnosis of Nervous Diseases*, the sixth edition[1] of which has recently been published. Every chapter has been revised; that on the psycho-neuroses has been completely rewritten, and a short chapter on delirium has been inserted. Though the book deals comprehensively with its subject, it is not intended to be a textbook. It is rather, as its author says, an appendix, approaching the subject from a clinical point of view, and intended to be used in conjunction with other standard works. The book is written from an essentially practical standpoint, and by supplying details of the methods of clinical examination, together with indications of the significance to be attached to the various nervous symptoms, it is well suited to the needs, not only of the teacher and specialist, but also of the general practitioner, to whom it will be invaluable as a book of reference.

The major portion of the new chapter on the psycho-neuroses is occupied with a clinical description of the protean manifestations of hysteria. Though the author discusses the psycho-neuroses from a psychological standpoint, he defines a neurosis in neurological terms as "a molecular abnormality of the nervous system (whether cerebro-spinal or vegetative, or both together) characterized by abnormal reactions to ordinary stimuli." It is a difficult matter to formulate an entirely satisfactory definition of what we now include under the term "neurosis." The author's definition is based upon the view that the boundary between organic diseases and the so-called functional neuroses (a term here used as synonymous with the psycho-neuroses) is wholly imaginary, and that disordered function is impossible without some underlying physical basis. Few neurologists would be disposed to deny the existence of some organic difference between the subject of a neurosis and a normal person, but the definition as a whole might be criticized on account of its essentially physiological colouring. The neuroses are disorders of personality, and in practice the neurotic has to be approached, described, and treated, not as a nervous system reacting abnormally to simple stimuli, but as a person reacting abnormally to complex situations. In a neurosis the functions of the organism are disordered at the highest, most recently evolved, and therefore most sensitive, levels of evolution, and, as Janet urged many years ago, this fundamental clinical fact should be made evident in a definition of the cases which we include under this category.

The author gives a few useful diagnostic points of differentiation between the neuroses and psychoses. There is still, however, much need for further investigation into this very difficult problem. In the early stages of mental disorder it is often hard to distinguish a neurosis from a psychosis, and the whole question is complicated by the fact that an illness showing all the characteristic symptoms of (say) an obsessional neurosis, may change its character and develop pronounced and incurable delusions. The fact that a new edition of this work had become necessary abundantly indicates that it meets the needs of the student of clinical neurology, and we have no doubt that the author's hope that the sixth edition may prove more useful than any of its predecessors will be fully realized.

[1] *The Diagnosis of Nervous Diseases.* By Sir James Purves-Stewart, K.C.M.G., C.B., M.D.Edin., F.R.C.P. London: Edward Arnold and Co. Sixth edition, revised. 1924. (Med. 8vo, pp. viii + 648; 285 figures, 1 plate. 30s. net.)

BISMUTH IN SYPHILIS.

THE use of bismuth as an alternative treatment of syphilis has been carefully recorded from time to time, so that readers have been able to form their own opinion of its value. As usually happens, its first advocates were probably rather too enthusiastic, and it is convenient to have a compact essay[2] by two French clinicians—BRIN and LEGRAIN—clearly setting out the present position, giving an account of the action of bismuth on syphilitic lesions, of incidents in the course of treatment, stating indications for its use, and describing the various preparations employed.

Bismuth is usually given by intramuscular injection, but it can also be administered intravenously or subcutaneously. The metal can afterwards be found in the blood and cerebro-spinal fluid, and in almost all the organs and tissues of the body; it is believed, however, that the meninges are impermeable to it. Elimination is effected by the kidneys and intestines, in the salivary and mammary glands, and in bile and sweat. If the salt administered be insoluble, bismuth appears in the urine in eighteen hours, and may be recovered twenty to thirty days after a course of injections. After the soluble salts elimination commences in two hours and reaches its maximum in twelve to fifteen hours. A full account is given of the various preparations, and their content of bismuth is stated. It would appear that the activity of a preparation depends not only on the amount of metal contained in it, but also on the chemical constitution, ease of disintegration, and facility of absorption. The preparations used are arranged in three main groups: insoluble preparations in an oily medium, including the tartro-bismuthates, oxides, and iodo-bismuthates; colloidal preparations (neotrépol, spirillan, and bisclorol); and soluble preparations, such as luatol, tarbisol, and galismuth. The insoluble preparations are the most generally useful; a "course" usually consists of fifteen to twenty injections, and an interval of not less than three weeks is allowed between courses; the dose of each preparation is stated and the method of administration clearly explained; it should be followed in detail. When toxic results ensue they may be local, "immediate general," or "late general." The last named are the most important; they include stomatitis (of varying severity) and renal complications.

Therapeutic results are considered in relation to the various stages of the disease and the Wassermann reaction. The indications for the administration of bismuth are classified as absolute and relative: the former include cases resistant to arsenic and mercury, of arsenic intolerance, and of chronic visceral syphilis. Contraindications are few. They include cases where the mouth is in such a bad state that severe stomatitis would almost inevitably follow, cachexia, and albuminuria not due to syphilis. Bismuth may be associated with arsenic, mercury, and iodine, but preferably with the first named. The authors summarize their conclusions as follows:

1. Bismuth comes between arsenobenzol and mercury in activity.
2. Its administration is simple and practicable.
3. It is without danger; no death due to bismuth has been reported.

[2] *Le Bismuth dans le traitement de la Syphilis.* Par Louis Brin et Pierre Legrain. Paris: Octave Doin. 1924. (Imp. 16mo, pp. 96. Fr. 6.)

4. The insoluble salts, especially the oxides and iodo-bismuthates, have more effect on the Wassermann reaction than the soluble.
5. Bismuth is specially useful in cases where arsenobenzol is contraindicated.
6. The only serious contraindication is albuminuria.
7. Bismuth should be used in association with arsenobenzol because the latter counteracts the effect of the former on the mouth, and the two are the most powerful antisyphilitic remedies we have.

The final general recommendation is that syphilis should be treated with arsenic and mercury followed by bismuth. The book, though small, is a veritable mine of information, and contains most of what is known at the present time regarding the treatment of syphilis by bismuth. The various questions that arise are dealt with in sequence and with sufficient fullness to enable anyone who has not previously given an injection of bismuth to undertake to do so.

PHYSIOLOGY AS THE BASIS OF CLINICAL MEDICINE.

IT was with considerable interest that we noted the appearance of *Human Physiology: A Practical Course*,[3] by Drs. C. G. DOUGLAS and J. G. PRIESTLEY. A perusal of its pages has not merely convinced us of the excellence of the material contained therein, but has stressed the importance of the part investigation on man is playing in the elucidation of physiological processes.

The book is an account of the practical course in human physiology which has been developed for the Final Honours School of Physiology in Oxford. The authors have been at considerable pains in describing in minute detail the methods of investigating the physiology of respiration, the respiratory exchange, the blood, the gases of the blood, the circulation, the kidneys, and the alimentary canal. All reference to the physiology of the central nervous system has been omitted, and the authors' reason for so doing—namely, "that this branch of the subject must be dealt with by one who has made a special study of it"—may be taken as indication that the subjects included are treated in a succinct and stimulating manner.

We believe the teaching of human physiology is to-day assuming a position of ever-increasing importance in our medical schools, and the reason for this is not far to seek. The development of the unit systems in teaching hospitals has created a demand for methods of investigation applicable to man in the pathological state at the very time when such methods, initiated and developed largely by the Haldane school of physiologists, are bearing such a rich harvest of purely physiological data. We are grateful, therefore, that these methods should have been collected into the compass of a single volume by two investigators who have themselves contributed so much to this branch of experimental work.

We commend the book whole-heartedly to the teaching staffs of medical schools, and are convinced that those engaged in the medical units will also find much therein of great value and solid worth.

A BIBLIOGRAPHY OF EUGENICS.

EUGENICS, to Mr. Chesterton, means "the control of some men over the marriage and unmarriage of others; and probably means the control of the few over the marriage and unmarriage of the many." If it were really as simple as this it would be a cause for astonishment to receive a large volume of 514 pages, containing some 10,000 references, and entitled *A Bibliography of Eugenics*,[4] by S. J. HOLMES. If, on the other hand, we agree with its founder that "National eugenics is the study of agencies under social control that may improve or impair the racial qualities of future generations either physically or mentally," our horizon becomes so far-flung that we can be surprised at nothing. Our American friends evidently take the broader view, as evidenced by this collection of literature.

Mr. Holmes rightly points out in an introductory note that, the science of eugenics being still in its childhood, many valuable facts are being daily recorded, the significance of which remains unappreciated until they are brought into proper relation with other facts, and that a great waste of effort is going on owing to a general lack or vagueness of outlook upon racial problems. In attempting the gigantic and weary task of sorting the vast amount of rubbish which has been written in the last two decades on eugenics as it appears on the platforms or in the publications of cranks, whose aim is to push some pet scheme for the reform of society, from the still more vast amount of useful material which has a direct or indirect bearing upon eugenics in its wider sense, the author merits our sympathy. The aim of the science in its present stage of development is to attempt to extract from the history of man's failures and successes what are the biological laws which control his development, and from the information thus gained to try to predict what lines of action are most calculated to favour his healthy physical and mental progress. It follows that the researcher into eugenic problems draws his material more from written records than from laboratory experiments, and finds it necessary to ransack the literature dealing with such wide fields as the heredity of human traits and defects, the hereditary factor in crime, vice, and disease, the selective influences of birth and death rates, urbanization and emigration, on populations, and the effects of parental age, consanguinity, race mixture, and environmental factors on the child. A bibliography attempting to embrace and classify this mass of writings has, therefore, a distinct value, and our only regret would be that the present volume gives no information as to the contents of the writings collected beyond what is contained in their titles. Very many of these will be found to be of little value to the student or researcher when he comes to read them, and a smaller selection of the best papers with a few lines indicating what is to be found in each would, we think, have been even more useful than the present volume.

TANTALUS.

MR. HALDANE has become responsible for a small family of little books—his *Daedalus* produced *Icarus*, and the two have begotten *Tantalus*,[5] by F. C. S. SCHILLER, D.Sc., a Fellow of Corpus Christi College, Oxford.

In his preface Dr. Schiller shows himself very anxious not to be taken for a pessimist. He believes the human race is degenerating, the herd is rushing down a steep place, but thinks it may be headed off from the final precipice. "Mankind can make a fool of itself, as it always could; if it does, its blood will be on its own head, for it has knowledge enough to avoid the dangers that threaten it, if it will use its knowledge properly." He claims therefore to be an optimist.

Let us see.

He begins by giving up any claim for improvement of man's bodily capacity or intellectual capaciousness. The Cro-Magnon people thirty thousand years ago or thereabouts had finer bodies and bigger brains. This is an opinion no disciple of Sir Arthur Keith can hastily reject. Early modern man had not acquired immunity to some pathogenic microbes recent man resists, but on the whole the latter's survival "is determined far more by his relations to the social group to which he belongs than by personal efficiency."

The first concession is made when Dr. Schiller admits that by the development of speech and its record in writing man has transmitted to his own and succeeding generations knowledge by which he has been able to give permanence to social institutions, and to his conquests over nature, while retaining a degree of plasticity the ant has lost. This concession to the idea of progress is immediately neutralized by a really savage attack on the modern professor. We do not recognize the science professor of our acquaintance in the portrait drawn, but history warns us

[3] *Human Physiology: A Practical Course.* By C. G. Douglas, C.M.G., M.C., D.M., F.R.S., and J. G. Priestley, M.C., D.M. Oxford: Clarendon Press. 1924. (Demy 8vo, pp. ix + 232; 30 figures. 12s. 6d. net.)

[4] *A Bibliography of Eugenics.* By Samuel J. Holmes. Berkeley, California: University of California Press. 1924. (Sup. roy. 8vo, pp. 514.)

[5] *Tantalus, or the Future of Man.* By F. C. S. Schiller, M.A., D.Sc., Fellow and Tutor of Corpus Christi College, Oxford. London: Kegan Paul, Trench, Trübner and Co., Ltd. 1924. (Fcap. 8vo, pp. 72. 2s. 6d. net.)

that there is truth in the assertion that we cannot "count on our academic institutions to save us from stagnation and decay even in matters of knowledge"; still we are inclined to think that Aristotle was right in believing that an inborn craving for knowledge is characteristic of man's nature. However, Dr. Schiller has no doubt that civilization tends to physical and intellectual degeneration, a tendency made more rapid in its effect by the postponement of marriage, the small families in the aristocratic, professional, and middle classes, and among most classes of skilled labour, and the unwisdom of our rulers in ordaining "that a knowledge of birth control shall be a (fatal) privilege reserved for the intelligent and well-to-do. They [our rulers] instruct the police to prevent it from penetrating to the poor and stupid." Matters are made worse by the advance of medicine and hygiene, and even obstetrics is to be blamed for saving "the lives of thousands of women whose physique is such that in former times they would inevitably have died in childbirth."

We are now more than three-fourths of the way through the book and begin to look for the optimism promised in the preface. This, after Christian ethics have been dismissed, we find in eugenics and a more business-like study of psychology. Man can save himself in this way, but the author does not presume to predict that he will. This is rather disappointing. Perhaps the next volume of the series will be entitled "Sisyphus."

BIRD MIGRATION.

MR. TAIT'S *Birds of Portugal*[6] is the only book that has been written in English solely about the birds of that country. This may appear at first strange, but is explained by his interesting preface. The author states that besides himself there is only one other field naturalist in the whole of Portugal. He sadly remembers two others, both doctors, but they died some years ago. Mr. Tait has hitherto been known to ornithologists for his list of the birds of Portugal, published in the *Ibis* in 1887, and his frequent reports of birds procured in Portugal with migration rings upon their legs.

Portugal is, ornithologically, a very important country, from the fact that it is on the high road along which the birds of Western Europe migrate from their northern breeding haunts to their winter quarters in the south. Mr. Tait has been watching, collecting, and studying the birds of Portugal for many years, and it is indeed fortunate that this important strip of Europe has found such a careful and enthusiastic historian. Through his efforts the Portuguese newspapers were induced to publish particulars of any birds that were shot and found to be wearing migration rings on their legs. The complete list of such birds is here printed. It is headed by the lesser black-backed gull, with 46 specimens; 26 of these had been born and marked in the Farne Islands, off the coast of Northumberland. The author has a good deal to say about bird migration, particularly about the movements of the vast flocks of turtle-doves that pass along the coast in the autumn. He records the interesting fact that the Portuguese chiffchaff and the minute fire-crest both winter in Portugal.

If Portugal suffers from a lack of bird-lovers or naturalists, it more than makes up for this shortage by a very plethora of sportsmen, or rather gunmen; for when migration is in full swing these slaughterers assemble in numbers all along the coast and blaze away at every bird which passes within shot. The result is that many species once numerous are becoming scarce, while some, as the purple water-hen and the bittern, appear to be extinct. Mr. Tait's book contains a few photographs; we wish he had given more. The Latin and the English and Portuguese names of each bird are given, and when a bird is known by a different name in different parts of the country each is mentioned; the chaffinch has as many as twelve different names in Portuguese. The book will prove useful both to the field naturalist abroad and the "closet naturalist" at home.

[6] *The Birds of Portugal.* By William C. Tait. London: H. F. and G. Witherby. 1924. (Demy 8vo, pp. xii + 260; 10 plates. 18s. net.)

NOTES ON BOOKS.

THE *System of Radiography, with an Atlas of the Normal*, by the late Dr. IRONSIDE BRUCE, first appeared in 1906, at a time when the principles of successful radiography had hardly been worked out. A second edition[7] has now been edited by Mr. J. MAGNUS REDDING, the senior surgical radiologist to Guy's Hospital. The general arrangement is as before, but the illustrations have been entirely renewed and certain modifications due to the advance of *x*-ray technique have been made. A short description of the methods, by which radiographs of the different parts are obtained in standard positions with the tube correctly centred, is followed by the atlas which constitutes the main portion of the book. A photograph of the subject and the tube in position precedes the radiographic results. In most instances radiographs of the part at 5 years, 10 years, and 25 years are reproduced side by side. Beneath each radiograph is a short statement as to the abnormalities that should be looked for. This is a very commendable scheme, and the radiographic illustrations are, on the whole, good. Some, however, do not come up to the standard of excellence which modern apparatus has made possible. This is the case in many of the reproductions of the spine and the pelvic region, in the majority of which fine bone detail is not shown. The short reference to renal work, and the one radiograph reproduced would have better been omitted, as the technique suggested is out of date. There is only one radiograph of the thorax, and radiography of the gastro-intestinal tract is apparently considered to be outside the scope of the volume. As an introduction to the subject of the radiological appearance of normal bones taken at three ages of life, under standard conditions, however, the book should be of use to the junior student of radiology.

In *Blood Pressure: Cause, Effect, and Remedy*,[8] Professor LEWELLYS F. BARKER and Dr. NORMAN B. COLE of the Johns Hopkins University describe in language to be understood of the layman "the information he would like to have," and which may be for his good, inasmuch as a sane presentation of the subject may allay unnecessary panic. Hence a book of this kind with its catholic appeal may, as the authors suggest, be in line with the whole trend of preventive medicine. It is suggested that if the term "average blood pressure" is employed instead of "normal blood pressure," not only will it be more accurate, but less likely to worry those anxious about their condition. Conquering any disinclination to read a book designed for a lay as well as a professional audience, the medical reader will find a sensible and well written presentation of the subject on these lines. There is also a short chapter on low blood pressure and a glossary. The rather striking and gaudy paper cover informing the public that "This *is* an Appleton book" may detract from its popularity.

The work on duodenal intubation,[9] by MM. M. CHIRAY and J. LEBON, which forms the latest contribution to the series of volumes on practical medicine and surgery issued by Masson of Paris, is an excellent introduction to the study of the subject. After a short historical survey, in which the credit for the first successful duodenal intubation is rightly attributed to Einhorn of New York, an account is given of the various tubes employed, such as those of Einhorn, Gross, Rehfuss and Palefski, Pisani, and Carnot. The application of the method is then described, including the preparation of the patient, the introduction of the tube and the recognition of its entry into the stomach and duodenum, the difficulties and facilities encountered, and the various modes of removal of the duodenal fluid. The next four chapters are devoted to a consideration of the physical, chemical, microscopical, and biological characters respectively of the duodenal fluid. In the following chapter, which deals with the diagnostic importance of duodenal intubation, the writers discuss its employment in cholecystitis, biliary obstruction, cancer of the bile ducts, diseases of the hepatic parenchyma, pancreas, and duodenum, and acute infections, especially enteric fever. The last chapter, which is concerned with the therapeutical uses of duodenal intubation, contains a description of duodenal feeding, duodenal lavage, and the Meltzer-Lyon medical drainage of the bile ducts. Bibliographies of French, British and American, and German literature are appended.

[7] *A System of Radiography, with an Atlas of the Normal.* (W. Ironside Bruce.) Second edition, edited by J. Magnus Redding. F.R.C.S.Eng., L.R.C.P. London: H. K. Lewis and Co., Ltd. 1924. (Oblong imp. 4to, pp. xii+98; 197 plates. 30s. net.)

[8] *Blood Pressure: Cause, Effect, and Remedy.* By Lewellys F. Barker, M.D., LL.D., and Norman B. Cole, M.D. New York and London: D. Appleton and Co. 1924. (Cr. 8vo, pp. iii+154. 5s.)

[9] *Le tubage intestinal; Ses applications cliniques.* Par M. Chiray et J. Lebon. Médecine et chirurgie pratiques. Paris: Masson et Cie. 1924. (Post 8vo. pp. 218; 24 figures, 2 plates. Fr. 10.)

PREPARATIONS AND APPLIANCES.

Tetraform.

CARBON TETRACHLORIDE has become recognized as a useful drug in the treatment of hookworm and other diseases caused by intestinal parasites. It is well known that commercial processes of manufacture lead to the occurrence of impurities. The dose given is relatively a large one, amounting in full to 60 minims. Some of the impurities which may be present as a result of the process of manufacture are toxic, notably carbon disulphide. It is accordingly important that carbon tetrachloride for medicinal use should have a high degree of purity. We have had submitted to our notice a sample of medicinal carbon tetrachloride manufactured by the British Drug Houses, Ltd., which they supply under the proprietary name of "Tetraform." It has been examined by our analyst. He reports that it is a highly refined article. He was unable to detect any of the impurities which are most usually found in commercial samples of carbon tetrachloride. He notes particularly the absence of aldehydes, and states, with regard to carbon disulphide, that a test capable of revealing its presence in a proportion no greater than 5 parts per million gave a negative result.

Dial, Didial, and Dialacetin.

We have before us three hypnotics prepared by the Clayton Aniline Company, Ltd., according to the formula of the Society of Chemical Industry in Basle.

Dial, or diallylbarbituric acid, is a powerful hypnotic of the veronal group. It has been on the market for some years. Pharmacological experiments have shown that it is about five times as strong as veronal, but the makers claim that it is much more rapidly oxidized in the body, and therefore is less liable to produce a cumulative effect. Reports by the makers suggest that the therapeutic dose has a remarkably wide margin of safety, for the ordinary dose is about 3 grains, and records are given of persons recovering after taking between 20 and 30 grains.

Didial consists of a mixture of dial with ethylmorphine. This combination is recommended particularly for initiating anaesthesia and inducing "twilight sleep."

Dialacetin consists of a mixture of dial and allylparacetaminophenol, being a coal-tar antipyretic allied to phenacetin. The mixture possesses hypnotic, analgesic, and antipyretic actions, and is said to be indicated as a sedative in febrile conditions associated with headache, etc. It is interesting to note that this last mixture has been tried in France as an alternative to bromides in epilepsy.

The makers state that all three drugs are included in the Part I schedule of poisons, but that they do not come under the regulations of the Dangerous Drugs Acts.

Parathyroid Gland.

Messrs. Burroughs Wellcome and Co. are supplying tabloids of parathyroid gland, each representing 2/5 grain of fresh gland, equivalent to 1/10 grain of the desiccated gland substance. The firm informs us that the glands are dissected out by trained workers, and that a careful inspection, checked by microscopic sections, is made to ensure the genuineness of the product.

Prunol.

Prunol is a laxative jelly made by Prunol Ltd. (4, Pickering Place, St. James Street, S.W.1). It is stated to be compounded of prunes, Demerara sugar, senna, and ginger. This combination has, of course, been well known to the medical profession for the last fifty years. It is said to have been originally introduced by Sir James Paget, and has proved itself of great value in cases of chronic constipation, particularly in children. Prunol is supplied in stoppered jars, price 1s. 10d.

Suprapubic Drainage.

Mr. JAMES MACMUNN (London) writes: In my experience all pumps and siphons, or allowing the urine to soak into dressings, are less satisfactory than the plans here illustrated.

Fig. 1 allows the urine to be absorbed and discharged as fast as it is secreted, by means of the large volume of absorbent gauze, beginning at C and ending at G. A is a metal tube over which B, a rubber tube, is slipped. Over B a rubber ring (D) is placed—a large umbrella ring will do—which, introduced into the bladder wound, pulls the latter into close contact with the parietes; falling away of the bladder from these is, of course, one of the causes of leakage. The bladder wound is sutured round the tube. E are two stout strings brought out either through or outside the tube to be tied round A so as to keep D in position; their untying allows the tube to be withdrawn, D being left in the bladder, and then withdrawn edgeways by one of the strings. F is a rubber tube, preferably an inner cycle tube for lightness, to shut in the gauze. The apparatus can be used as a siphon as well as a drain, or as a siphon alone. The gauze is introduced by a long wire and wetted. Irrigation may be used through A.

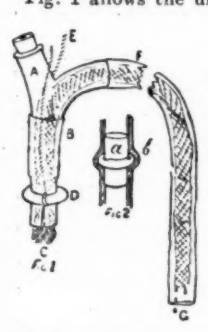

Fig. 2 shows a means I often adopted in connexion with the ordinary drainage tube. *a* is a metal ferrule, the use of which is apparent—that is, it also draws the bladder up. The shoulder may be bell or trumpet shaped instead of ring shaped. The withdrawal of such contrivances, however, causes a certain strain on the wound which is absent in the use of Fig. 1, but it is not much. The instruments are made from my working models by the Holborn Instrument Company.

I may mention, whilst alluding to cycle tubes, that extemporized things are often more useful in practice than specially made and expensive things—for example, a part of a motor wheel inner tube, tied at the lower end and strapped to the thigh, makes a most efficient receptacle for urine where a permanent catheter is used; into the end of the catheter a metal tube is passed, round which the upper part of the rubber tube is tightly tied.

THE JAPANESE EARTHQUAKE.

NOTES FROM KOBE ON THE MEDICAL HISTORY.

BY

FREDERIC BARKER, M.B., B.S.LOND.,

AND

G. ANDREW BIRD, *M.C.*, M.B., B.S., B.SC.LOND.

IN Japan the term "foreigner" is applied to all races not Japanese, and it is with foreigners only that these notes deal. The foreign community occupies a somewhat peculiar position, in that, while living in the midst of a civilization equal to that of Europe, it has retained the habit of fending for itself, and its behaviour in this crisis was no exception to the general rule. The foreign community must be subdivided into Chinese and non-Chinese, for while non-Chinese races work and live together and run their affairs through international committees, the Chinese are self-contained and move apart from Japanese and other foreigners alike.

General Considerations.

It will be remembered that the shocks occurred shortly before midday on Saturday, September 1st, 1923, that they covered a large area of country, were followed by fires and high winds, and were worst felt at Yokohama. Certain factors were favourable to a low casualty list. The women, children, and missionary population had not yet returned from the hills, and many residents were away at neighbouring health resorts for the week-end. It was an hour when most Yokohama residents were down in the settlement, and thus able to reach the sea and to avoid the fires. The s.s. *Empress of Australia* was due to leave at midday, and large numbers were down on the dock seeing off friends, and were thus able to go straight on board this vessel. On the other hand, the earthquake itself undoubtedly claimed more victims in the higher, more solid buildings of the settlement than in the wooden residences of the Bluff. None of these considerations affected the Chinese, and these unfortunate people, penned in the low-lying China Town, with narrow streets and poor means of egress, were quickly surrounded by flames; their losses were appalling.

In Tokyo the shocks were not so severe, and there were comparatively few foreigners in the city at the time. Such as there were were collected mostly in the Imperial Hotel, and this structure successfully withstood both earthquake and fire. In the outlying districts there were no foreign buildings, and people were, in the large majority of instances, able to escape from houses at the first shock. Except in Tokyo and Yokohama there were no fires to contend with. There were in the harbour at the time ships of various nationalities, and it was in these that most of the refugees escaped. Land communications were for some days paralysed, and few used the roads and railways.

Organization in Kobe.

The first news did not reach Kobe until the morning of September 2nd. Communications are frequently interrupted in Japan, and it was not until late in the afternoon that more accurate reports confirmed what was at first thought to be an exaggerated rumour. The extent of the casualties could only be guessed, but it was immediately apparent that the whole brunt of caring for foreign casualties and refugees alike would fall on Kobe, which is twenty-four hours' steaming from Yokohama. Shanghai, the next foreign settlement, is three and a half days by sea.

Facilities for dealing with a crisis of this nature were miserably inadequate. Kobe boasted one foreign hospital, the International, and it was soon discovered that this was the only institution of the kind in working order left in Japan. The hospital had 14 beds only, and was staffed by three foreign doctors—two British and one German. There was also an American doctor practising in Kobe but not on the staff. A foreign matron was in charge of the nursing staff, which consisted of Japanese male and female nurses. Of stretchers there were only two, and these of the "wheeled" variety, and the usual time for transport of a case from the dock to hospital was three-quarters of an hour. The American and German doctors happened to be away in the north of Japan and were unable to get back in time to help in the emergency. Under the energetic supervision of the matron, Miss Macfarlane, supplies were collected, three additional Japanese nurses engaged, and the number of beds increased, so that by the morning of September 3rd accommodation for 32 serious cases was in readiness.

The Oriental Hotel put its ballroom at the disposal of a rapidly organized relief committee, and by the morning of September 4th accommodation for about 60 walking cases was arranged here under volunteer foreign nurses. A private house was fitted up as a four-bedded maternity home.

The foreign community held a meeting at 4 p.m. on September 3rd, subscribed £5,000 within half an hour, delegated subcommittees to deal with special branches, and arranged to send a relief ship the same night to Yokohama with medical supplies and a large quantity of water. The last was rightly held to be the most urgent need, and was justified on arrival by the discovery that all water mains had been broken and that a water famine was already in existence. The German community, meeting independently, arranged to act in close co-operation, and assumed responsibility for ambulance transport. They fitted three motor vans with improvised stretchers, and also provided bearer parties and drivers. The personnel were ex-service men under ex-N.C.O.s, and worked efficiently and without friction under the orders of the British doctors.

Confusion on arrival of ships was anticipated by printed labels, "Hospital" and "Hotel," and whenever either of the doctors could be spared ships were met at Wada Point quarantine station and the appropriate labels affixed before the ship came into port.

Arrival of Refugees.

The first ship to arrive was the s.s. *West O'Rowa*, at 1 a.m. on September 4th; by the night of September 8th practically all the casualties had arrived. Though wireless messages were received reporting large numbers of serious cases, the actual number of stretcher cases dealt with was remarkably small. Accurate statistics have not been published, and in fact are not known, but the last official report in the *Osaki Asahi Shimbun* gave the refugees arriving at Kobe by sea as 3,553 Chinese and 1,743 European. By our private medical records 132 casualties were received in all—42 serious cases at the International Hospital and 90 walking cases at the Oriental Hotel Hospital.

The European refugees were absorbed by the community with difficulty, the greatest problem being the Russians. A certain percentage of these people might almost be termed "professional refugees," and unless carefully watched drew their rations and clothing in excess. They were finally housed in the Gymnasium; it was surrounded by barbed wire and guards placed at the entrances. Several cases of venereal disease were discovered among them, but these had to be isolated as well as possible in their own compound, there being no available hospital accommodation for this class of case. Food supplies generally were adequate, but clothing gave rise to more difficulty.

The manner in which the Kobe Chinese absorbed their own nationals and generally managed their own problems was worthy of all praise. They gave the relief committee very little trouble, and looked after the questions of food and clothing without calling on outside assistance.

Hospital Cases.

Among the 42 serious cases admitted to the International Hospital the following nationalities were represented:

British	14	American ...	5	Japanese ...	2
Russian	7	German	4	Polish	1
Chinese	6	French	2	Italian	1

The low proportion of serious cases is partially explained by various considerations. The conditions following the earthquake rendered the chances of saving serious cases exceedingly slight. In this connexion the heroic work of Misses Dalton and Little, matron and assistant matron of the Yokohama General Hospital, must be mentioned. With the assistance of a patient they removed three helpless cases from the falling building, stayed with them all night, having to make frequent changes of position to avoid the flames, and finally succeeded in getting them to Kobe uninjured. For this they received the decoration of O.B.E. The casualties among the Yokohama doctors had been high. Of the five practising, two had been killed and one sustained a compound fracture. The operating theatres had been put out of action, and thus no surgical treatment was possible until Kobe was reached. A certain number of deaths occurred at sea in transit.

Of these cases, 28 were directly due to the catastrophe. The disabilities were as follows:

Traumatism.	
Fractures	14
Wounds and contusions	9
Burns	3
Dislocations	2
Other Cases.	
Diseases of central nervous system	3
Acute mastoiditis	1
Maternity	1
Deaths.	
Head injuries	3
Pyo-pneumothorax	1
Double fractured femur	1
Burns	1
Ruptured liver	1

The following are notes of some cases of interest.

Case 1.—R. C. E. His left hand was crushed in the fall of a building, but he was released by the second shock. He wore a tourniquet for eight hours above the elbow. When admitted on September 4th he had gas gangrene of four fingers and the metacarpus of the hand. An elliptical amputation was made through the mid-carpus, preserving the thumb. Massive septic oedema ensued, which, in spite of multiple incisions down to the bone, serum and collosol silver treatment, gradually extended up the arm and finally encroached on the chest wall. No pus formed until twenty-seven days after the injury, when an abscess appeared in the axilla. This was allowed to develop for four days; after its evacuation the temperature subsided and sepsis rapidly cleared up. He has now a useful arm, including the thumb.

Case 2.—F. B. H., a man aged 65, was admitted on September 4th with comminuted fracture of the right tarsus and two compound tibia-fibula fractures of the same leg. Gas gangrene extended three inches above the ankle. Circular amputation at junction of upper and middle thirds of the leg was performed. Severe secondary haemorrhage occurred nineteen days after the injury. After subsequent removal of 1½ in. of the tibia he recovered with a good stump.

Case 3.—F. A., a boy aged 12. Fractured pelvis: tetanus. This patient was of German nationality and was taken over by Professor Härtel, to whose care recovery was due.

Case 4.—A. B., a girl aged 6, was admitted on September 4th with rapid pulse, signs of free fluid in the peritoneal cavity, and acute anaemia. Laparotomy showed a rupture of the liver three inches in extent, plugged by clot and no longer bleeding. Death occurred five hours after operation.

Case 5.—H. T. gave a history of having fallen with the second floor when the building collapsed. Pain in the thigh led to *x*-ray examination, which showed a foreign body of pencil shape, of equal density to bone, embedded in the mid-thigh. This proved to be a fragment of a knitting needle, and only on being shown this did she remember that she was knitting at the time of the earthquake.

Case 6.—E. L., a woman aged 18, had contusion of the liver, but recovered without operation. Subsequently she developed ulnar nerve paralysis with wasting of the small muscles of the hand. Scars of wounds at the elbow were explored, but no nerve lesion was discovered. Sensation and movement gradually returned. There had been severe contusions of the shoulder and elbow, and the case was apparently one of nerve concussion.

The three deaths under "head injuries" were cases indistinguishable from "shell shock" as seen in the great

war. No lesions were discovered. One case lived five days in a condition of complete aphasia with continuous tremors of the extremities. His identity was not established; 90 light cases were treated at the Oriental Hotel and 4 at the maternity home.

Relief units were sent from Shanghai, Manila, Tientsin, and other places, but owing to the distances the first party did not arrive until September 7th. From this date medical units poured in in expectation of a large casualty list, and by September 12th a large foreign medical organization was in working order. Since casualties had occurred on one day only, work rapidly decreased, and these units, finding the Japanese had their own organization, quickly returned to their bases. Medical stores were, for the most part, left with the Japanese and were gratefully accepted by them. By the beginning of January the hospital was emptied of its earthquake sufferers and the Oriental Hotel ballroom was again fulfilling its usual function. By this time, too, overcrowding of houses was less apparent, for further earthquakes in Kobe itself had finally decided many waverers to leave the country.

INCOME TAX.

Expenses Allowable.

From inquiries which reach us from time to time it would seem desirable to set out the principles which govern the position with regard to the deduction of expenses from gross receipts in somewhat greater detail than is practicable in a brief answer to a specific inquiry. The legal requirement is that assessments to income tax in respect of practitioners' profits shall be made by certain local commissioners, who have before them particulars of the taxpayer's declaration of income and of any supplementary information—in the form of accounts, for instance—that he may have furnished. In passing, it may perhaps be added that the assessment will be made by the "special commissioners" instead of the local commissioners if the taxpayer completes the appropriate blank request on the form of declaration. An appeal against an assessment is determined by a different panel of the local commissioners or by the special commissioners if the assessment was made by that body, or, if requested, even if it was made by the local commissioners. In practice, however, the inspector of taxes usually puts an assessment forward for confirmation or amendment by the appropriate commissioners, and deals with any objections lodged against it. The procedure has been stated because it may to some extent account for differences sometimes alleged to exist; inspectors of taxes, being controlled by a central department, should achieve uniformity of practice, but it is not clear that this is a necessary, or in small matters even a normal, result of the action of independent commissioners, who are the final judges on matters of fact. So far as our experience goes, however, commissioners very rarely refuse to allow an expense if the inspector of taxes is willing to admit the claim to deduct it, and there appears to be a certain lack of uniformity with regard, at any rate, to some of the minor expenses allowed.

The great number of taxpayers to be dealt with and the diversity of their incomes make it difficult to secure that a system of taxation of incomes shall be reasonably proof against evasion and yet not press with undue harshness on any particular class. The Income Tax Acts seek to do this by dividing all incomes into five classes or schedules, and laying down suitable rules for ascertaining the amount assessable under each schedule; income derived from property, for instance, is assessable according to the rules of Schedule A, income from employment under Schedule E, and so on. But the most important and also the least easy class of income to deal with is that falling under Schedule D—namely, profits and income not falling under any of the other schedules. The questions which most frequently create difficulty are those which arise in connexion with the admissibility of certain deductions to be made in calculating the assessable profit.

The Income Tax Acts do not lay down specific categories of expenditure to be deducted, but deal with the question by prohibiting the allowance of certain classes, and the effect of the judgements in a number of leading cases—notably that of Bruce *v.* Ussher's Wiltshire Brewery—is that, while capital and personal expenditure must be excluded, regard may be had to well accepted commercial practice provided that the specific prohibitions are not infringed. On this basis the allowable expenditure may be set out as follows:

Expenditure Exclusively Professional.

Salary of dispenser, including board if provided; fee for keeping and auditing the accounts; rent, maintenance, rates, and cost of cleaning of premises used for professional purposes where rented separately from the residence; cost of drugs, etc., supplied; cost (including board) of services of a locumtenent or assistant; cost of running a car used for professional purposes only—for example, petrol, oil, tyres, overhauling, replacement, wages (and board) of chauffeur; replacement of medical books and instruments, subscriptions for medical journals, stamps and stationery used for professional accounts.

Expenditure Apportioned from General Expenditure.

Proportion of rent of house where partly used for professional purposes, and similarly for local rates, cost of lighting and heating, of decorations and repairs and of the telephone service; a proportion of the cost of the domestic staff based on a comparison of the time spent on the private as distinct from the professional portion of the house.

It is impossible to lay down any rule of thumb for determining the appropriate proportions to be treated as deductible; it must be fixed with regard to the facts of each individual case, and is really a matter of common sense. For instance, where the motor car is used for private as well as for professional purposes, ordinarily the mileage basis would be correct, but it would be wrong to divide proportionately the cost of repairing damage caused by an accident when the car was being used definitely for one purpose or the other.

The above remarks apply to the assessment of professional *profits*; where a salary is concerned the position is somewhat different, as allowable expenses are restricted to those incurred "wholly, exclusively, and necessarily in the performance of the duties." As an illustration of the difference we may point out that, while a subscription to the British Medical Association is allowable in the case of a Schedule D assessment on profits, it would be refused—and apparently with good legal justification—in the case of an assessment of a salary, unless the employer required the employee to be a member of the Association as a condition of holding the appointment.

Some time ago a departmental committee was appointed, under the chairmanship of Mr. Justice Rowlatt, to consider the feasibility of simplifying the income-tax forms. That committee has reported, but was apparently unable to recommend any radical simplification so long as the present system of administration and the existing statutory code remain in force; in other words, the present complexity seems to be, in the opinion of the committee, a lamentable result of applying a rigid scheme of taxation to circumstances of almost infinite complexity. It is, however, to be presumed that the committee's activities have not been fruitless, and that the forms used in future will be found to be more intelligible to the average taxpayer than they have been in previous years. It is to be hoped so, for if the expectations raised by the appointment of the departmental committee are disappointed there will be a movement towards a radical amendment of the statutes themselves, the consequences of which would be more likely to benefit the astute business man than the professional practitioner.

We have endeavoured here to indicate some of the general principles by which practitioners should be guided in making their returns, in discussing with the inspector any objections he may raise, or in deciding to make an appeal. We do not think it is possible to go further, for individual circumstances differ so much that the application of principles may often present considerable difficulties. We shall continue to give definite assistance by advice to practitioners who submit specific questions, stating the full facts. It would save a great deal of trouble both to inquirers and to this office were this last point kept in mind—namely, that the statement of fact should be full.

Nova et Vetera.

ASSYRIAN BOTANY.

MR. CAMPBELL THOMPSON has long been known to Assyriologists not only as one of the most indefatigable copyists on the staff of the British Museum—for which, indeed, he edited no less than ten out of thirty-seven volumes in the series of "Cuneiform Texts in the British Museum"—but as a specialist in Babylonian witchcraft and demonology. According to the Babylonians, devils and evil spirits were the causes of headaches, fevers, and all bodily ailments:

> "The evil spirit hath lain in wait in the desert,
> Unto the side of the man hath he drawn nigh,
> The evil ghost for ever is rampant,
> And none can resist him.
> The evil demon goeth furtively in the desert,
> And causeth slaughter among men;
> The evil devil prowleth in the city
> And hath no rest from slaughtering men.
> They smite the hero, they lay low the maiden;
> They tear the children in pieces like a leek,
> They tear out the heart . . ."

And then the patient is described:

> "He cannot lift his limbs nor turn his side;
> He hath no desire to eat food nor drink water.
> His limbs are loosed and his body is filled with pain."[1]

The most obvious way to cure the patient, therefore, was to have recourse to incantations or charms and to sympathetic magic:

> "Fashion a figure of him in dough,
> Put water upon the man and pour forth the water of incantation;
> Bring forth a censer and torch.
> As the water trickleth away from his body may the pestilence in his body trickle away.
> Pour back these waters into a cup and pour them forth in the broad places,
> That the evil influence which hath brought low his strength
> May be carried away into the broad places,
> That the spittle which hath been spat may be poured forth like water,
> That the magic that mingled with the spittle spat forth
> May be turned back."[2]

Having studied these magical texts there is small cause for wonder that Mr. Campbell Thompson, whose father was a doctor, should go on to see to what extent the Babylonians had any real knowledge of medicine and of the medicinal value of drugs. The fruits of the first of these labours were given to the world last year, when he published his collection of *Assyrian Medical Texts, from the Originals in the British Museum*. In a note on this volume published in the BRITISH MEDICAL JOURNAL of March 22nd, 1924 (p. 538), we mentioned that it consisted of 107 plates, reproducing the text of 660 cuneiform medical tablets. Mr. Thompson recently communicated to the Section of the History of Medicine of the Royal Society of Medicine translations of some of the texts; as an example the following may be cited:

> "If a man's head has an itching . . . with oil of cedar shalt thou anoint (it)."

There is even a prescription for darkening prematurely grey hairs, for which a mixture of cypress oil and an incantation is recommended!

The medicinal use of the various herbs known to the Assyrians has been carefully investigated by Mr. Campbell Thompson and published this year in his *Assyrian Herbal*.[3] In this excellent monograph the author has been able to identify some 50 new plants and 120 minerals, and to correct a number of old translations. The sources of which he has been able to make use are primarily—(1) the medical texts, and (2) the botanical lists drawn up by the Assyrian scribes. The latter source has been chiefly of philological value, the former of practical value; for he has often been able to identify a plant from the use to which it was put by Assyrian practitioners. Another means of identification has been found in a comparison of the Assyrian drugs with those found in Greek and Roman, as well as Syrian, writers on similar subjects. In addition to this, the author has the advantage of a thorough acquaintance with the country at first hand, and a good knowledge of the plants now to be found in Mesopotamia.

An example of his method will serve more clearly to show how he arrives at his conclusions. Let us take mustard, the herb described on pages 62 and 63. In the first place, its applications are tabulated: externally, to the eyes, feet, or ears, for swelling and for coughs, used for anointing and to be bound on, especially above the lungs (that is, in poultices); internally, for the stomach, for jaundice, for singing of the ears, and the hand of a ghost! Further, "when a man's inside eats him" it is to be drunk in beer with salt, or alone in beer or water (that is, as an emetic); it also served as a mouth wash, for urinary trouble, for dyspnoea and haemorrhoids, and its root was used in toothache; it was also pounded down. It is also included in the four plants used for staining the hands (as the modern Arabs dye theirs yellow), two of the others being saffron and turmeric. To sum up: it is a common yellow drug, sometimes powdered, drunk alone or in combination with other ingredients in water as an emetic, used as a poultice for complaints of the chest and for the feet; it acts on the saliva, and its root is used for toothache. This, says Mr. Campbell Thompson, is clearly mustard, probably *Sinapis arvensis*, a plant which grows in abundance round Mosul. To confirm this identification the author compares the use made of mustard by other races: for example, it was used for *ὑπωπία* of the eyes (Dioscorides), while its root was chewed for toothache (Gerard); by Indians it is swallowed whole as a laxative and is also employed by them in apoplexy, convulsions, insanity, dropsy, cholera, coughs, and toothache, as well as for application as a poultice to the feet. No one will doubt that Mr. Campbell Thompson's rendering of *khaldappânu* as "mustard" is more probable than its former identification as "rhododaphne."

Other plants similarly identified are the ordinary poppy, the opium poppy, the anemone, which the Assyrians called "sheen of silver," camomile, the vetches, the medlar, and so on. Castor oil appears to have been widely used (pp. 190, 191): for example, for the feet and ears, for swelling, as a poultice, as a purgative, and in combination with alkali to make a sort of soap for washing, especially for washing the head. In Palestine to this day it is interesting to note that olive oil is used with alkali for the same purpose; Pliny, too, speaks of a soap made of tallow and ashes.

At the same time some old identifications are corrected; thus *nurmû* is translated "pomegranate" instead of *armânu*, which becomes "apricot" (pp. 176-179). This identification of *nurmû* as "pomegranate" received curious confirmation long after it had occurred to the author; a late Babylonian contract came into his hands, describing a collarette with *nurmû* ornaments, which were roughly drawn at the bottom of the tablet by the scribe and were clearly pomegranates. The equation of *armânu* with "apricot" is confirmed by two facts: (1) in Syriac the cognate word *'armenāyâ* means "apricot," and (2) this word must be the origin of the name *Prunus armeniaca*, and not the land of Armenia, for apricots cannot grow on snow-covered hills. Thus philology and botany combine to disprove the error originally made by the Romans, who mistranslated *armânu* as "Armeniaca"![4] The cherry also has an interesting philological history. Varro and other Roman writers state that it was imported by Lucullus into Rome from Asia Minor from a town called Cerasûs, and that it received its name from that town.[5] But Mr. Campbell Thompson has no difficulty in showing (pp. 129-130) that it came from still farther east and that it was known to the Assyrians under the name *karshu*; this, then, proves that it was not called by the Romans *cerasus* from the town of Cerasûs, but from the Assyrian *karshu*[6]; further, the town was so called as being the "cherry-town"[7] *par excellence* or centre of

[1] Campbell Thompson, *The Devils and Evil Spirits of Babylonia*, vol. ii, pp. 104-107 (1903).
[2] Ibid., pp. 108-109.
[3] *The Assyrian Herbal*. By R. Campbell Thompson, M.A., F.S.A., Fellow of Merton College, Oxford. London: Luzac and Co. 1924. (Long 8vo, pp. xxvii + 294. 30s.)

[4] Cp. Isidorus (*Etymologiae*, XVII, vii, 7): Armeniacum dicitur quod primum genus ab Armenia sit advectum.
[5] Id. ib., XVII, vii, 16: "cerasus et Ceraso urbe Ponti vocata," but he admits that it was known in Italy before Lucullus, though hard and inedible. Pliny (*Historia Naturalis*, I, xiii, 30) knew that cherries were found as far east as Persia.
[6] The old derivation from the Greek *κέρας*, "horn," must therefore be given up.
[7] The Greek name Κερασοῦς is adjectival in form and therefore derivative, and not the source of the word *cerasus*; there were two or three towns of this name on the southern shores of the Black Sea.

the cherry trade in Asia Minor. Occasionally, too, light is thrown on obscure passages in the Old Testament. Thus the Revised Version translates Leviticus xxiii, 40: "And ye shall take you on the first day the fruit of goodly trees, branches of palm trees, and boughs of thick trees, and willows of the brook," etc., where the words rendered "goodly trees" are literally "trees of *hādār*" in Hebrew. Now the old Jewish scholars translated this "trees of citron"; but modern scholars, knowing no word *hādār*, "citron," in any Semitic language, substituted for the traditional translation "trees of goodness"—that is, goodly trees—from the well known Hebrew *hādār*, "splendour," "honour," "ornament"—a poetical word hardly applicable to trees. Mr. Campbell Thompson, however, has established the fact that *adaru* (*-u* being only the termination of the nominative case) in Assyrian means "citron" (p. 182); the Hebrew *hādār* is therefore cognate with and must bear the same meaning as the Assyrian *adaru*, the loss of the *h* being due to the absence of the soft *h* from the Assyrian language.

Enough has been said to show the author's method; by a careful comparison of all the occurrences of a plant in literature and a study of the uses to which it was put, in conjunction with the philological information to be obtained from the cognate languages, Mr. Campbell Thompson, who is both a scholar and a scientist, has been able materially to increase the accuracy of our knowledge of the Assyrian language in a special field. Although Assyriologists may occasionally hesitate to agree with his philology—and the interchange of letters in the Semitic languages is a thorny subject—all owe him a deep debt of gratitude for a thorough handling of a number of difficult problems; for many years to come, it is not too much to say, his admirable book will be the standard work on the subject. It is only to be regretted that the author could not afford to have his invaluable work printed, but was compelled to have his manuscript lithographed; for, as is inevitable in such cases, there are a certain number of places where the text is, for various reasons, nearly, if not quite, illegible.

Oxford. G. R. DRIVER.

FUR DERMATITIS.

DURING the winter of 1922-3 cases of dermatitis, attributed to the wearing of fur collars, were observed in London and in other parts of the country. In our columns of March 17th, 1923, Dr. H. C. Semon gave an account of the symptoms, based on his experience at the Royal Northern Hospital, London, and suggested that the irritant concerned belonged to the paraphenylendiamine group of textile dyes. This possibility had been previously put forward in our issue of July 1st, 1922, when a note was published in the Epitome giving an account of cases reported in the *Ugeskrift for Laeger*, April 13th, 1922, and of the use of this dye in the German fur industry which had appeared in the *Deutsche medizinische Wochenschrift*, 1913, No. 49. On February 7th, 1923, Dr. J. H. Sequeira reported to the Chief Medical Officer of the Ministry of Health that a number of patients with dermatitis of the neck and adjacent parts of the face, associated with the wearing of certain furs, were being treated at the London Hospital and at other skin clinics in London; and it was subsequently decided that an inquiry should be made into the matter, to include the investigation of complaints, the verification of the evidence incriminating certain coloured furs, and the estimation, in so far as was possible, of the character and seriousness of the skin disease. The inquiry was entrusted to Dr. A. C. Parsons, and his report[1] has now been published by the Ministry of Health.

As a first step the Ministry arranged a conference with a subcommittee of the London Fur Trade Association, and communicated with dermatologists throughout the country. One of these dermatologists, Dr. A. C. Roxburgh, who was closely associated with the inquiry, contributed a brief review of this dermatitis to our columns of March 24th, 1923 (p. 534), in which number, also, Dr. W. F. Castle described the dyeing process employed in furs. Public health officers throughout the country co-operated with the Ministry; evidence was received from private individuals, and examinations of the incriminated furs were made by public analysts, the fur trade, and later, at the request of the Ministry, by Professor A. G. Perkins, F.R.S., whose observations are published in an appendix to the report.

The results obtained by Dr. Parsons are classed under the following headings: (1) epidemiological, (2) clinical, (3) the furs in question, (4) the fault in the furs. Under the first heading the outbreak of dermatitis in February, 1923, is associated with the shopping season at the preceding Christmas, 1922, and the following new year; the total number of cases affected down to July, 1923, when complaints ceased, is given as about 1,000. Dr. Roxburgh, in his account in the BRITISH MEDICAL JOURNAL, had indicated the existence of a definite latent period before symptoms developed, possibly due to the gradual development in the patient of a sensitiveness to the irritant. Personal idiosyncrasy is stated by Dr. Parsons to be certainly a factor in the determination of symptoms, which in some cases seemed to be dependent on the skin of the wearers being greasy. In the great majority of cases the rash was localized to the neck and face, but occurred on the wrists when fur cuffs were worn; in rare instances it extended to the chest and arms. The dermatitis usually ceased when the furs were discarded, but the cure of some patients was delayed owing, apparently, to the establishment of a hypersensitive condition of the skin.

The furs in question were found to be those known as "beaver-coney," the pelt for which, according to the Fur Trade Association, is supplied by the rabbit. In all cases the furs were dyed, and it was not suggested that the hair itself was responsible for the irritation except in two cases. The association was of the opinion that the furs came from abroad, and in a statement issued to its members it asserted that such furs were the products of American, Belgian, French, and German dyers. Dr. Parsons, however, states that there seems to be no definite proof that English furriers can be entirely absolved, and that it was quite clear from informal discussions that the association was not prepared to answer for the innocence of British firms not members of their own body. In assessing the fault in the furs Dr. Parsons gives reasons for believing that the factor of personal idiosyncrasy is not paramount; he discusses in detail the various dyes and processes used in the preparation of imitation furs, with especial reference to the evidence of Dr. W. F. Castle in the BRITISH MEDICAL JOURNAL, which included a list of the dyes used and the colours produced by them. Dr. Parsons draws attention to the interesting point that the deeper the shade produced the less likely is that particular dye to cause irritation. There is said to be a difference in harmful potentiality of the various dyes, and both depth of colour and harmlessness to the human skin increase with each progressive stage in the oxidation of the dye. The medium shades of furs were therefore the most likely to cause trouble, and it was found actually that the dark grey and brown furs were those chiefly responsible for the complaints.

In his summary and conclusions Dr. Parsons points out that there is no history of any previous aggregation of cases comparable with the 1922-3 "epidemic," though sporadic cases of fur dermatitis had been reported. To a less extent there was a similar outbreak in the winter 1923-4. No special localization of cases could be detected, and complaints of the same kind were made in France and Germany.

Professor A. G. Perkins, in an appendix to the report, gives his conclusions with reserve, but draws attention to the lack of homogeneity in the colouring matter of these furs: much of it was insoluble in the usual solvents, but some portions were soluble in water, some in boiling alcohol, and others in cold dilute hydrochloric acid. He considers that this lack of homogeneity may have arisen from a faulty application of the dyeing process; in other words, an incomplete oxidation of the developer to the finished dyestuff. The possibility of the mordanting process which results in the deposition of minute crystals of dye being injurious to health is also recognized; finally, Professor Perkins refers to the statement of Dr. Castle that the colouring agent appears to dissolve in the fatty acids associated with a greasy skin.

[1] Reports on Public Health and Medical Subjects, No. 27, Fur Dermatitis. H.M. Stationery Office; price 9d. net.

NATIONAL VETERINARY ASSOCIATION.

THE National Veterinary Medical Association has met in Aberdeen this week, and some of the papers illustrate the fact that the study of the pathology and even the therapeutics of disease in the domestic mammals can throw light on questions in which the medical profession is closely concerned. We cannot pretend to give an account of all the activities of the meeting, but have picked out a few subjects of medical importance.

ANAEROBIC INFECTIONS IN ANIMALS.

Anaerobic infections are not confined to man, and in a paper read during the meeting Gaiger summarized our knowledge of them in the domestic animals. *B. chauvaei* is the chief organism responsible for blackquarter in cattle and sheep, but *V. septique* and possibly *B. oedematiens* are also implicated. The disease (sometimes called symptomatic anthrax) attacks especially young stock. There is a local emphysematous lesion —not always on the quarters, however—at the site of inoculation Death, as a rule, results within forty-eight hours. Methods of vaccination against the disease are now in successful use. *V. septique* is responsible for equine malignant oedema, most cases of ovine and porcine blackquarter, and probably also for braxy in sheep. Malignant oedema is the equine equivalent of blackquarter in cattle. The disease is a not infrequent complication of castration wounds, and is a typical gas gangrene. It may be taken as a general rule that anaerobic infections in cattle are due to *B. chauvaei* with an original muscle lesion, while those in sheep are due to *V. septique* with an alimentary lesion. Braxy in sheep runs a very rapid course, and death usually occurs within a few hours. It has a peculiar seasonal and geographical distribution which has not yet been satisfactorily explained. Braxy is responsible for a very large mortality in those areas where it is found—it may be as high as 35 per cent. among sheep in their first winter; Gaiger reported that by means of a vaccine prepared from *V. septique* he had been able to reduce the mortality to a quarter of this figure. *B. welchii*, although highly pathogenic on inoculation, has not yet been recorded as the cause of any serious disease in the domestic animals. It was, of course, one of the most serious of the gas gangrene organisms of the war, and Gaiger has found it in ulcers of lamb dysentery; he has found it also occasionally in scrapie in sheep; but he is not yet prepared to state its exact significance in this direction. *B. sporogenes* is a very common contamination of anaerobic cultures, and is interesting mainly on account of its therapeutic uses. It is known to veterinarians as the "Reading bacillus," and has been used to some extent in the treatment of sloughing wounds. The effects of *B. botulinus* in the domestic animals are by no means fully understood. It has recently been suggested that this organism is responsible for the so-called "grass sickness" of horses in this country. This disease is characterized by intestinal troubles, spasm of the throat, and muscular tremors. It is generally fatal. Gaiger holds that *B. botulinus* is not the causal organism; that in general this organism is a saprophyte rather than a parasite; and that it can only be accepted as the cause of symptoms when its toxins have been formed outside the body in spoiled food.

CANINE DISTEMPER.

Canine distemper is a disease of perennial interest, not only on account of its seriousness in dogs, but also because the solution of its many problems may throw considerable light on analogous diseases in man. The Medical Research Council, with the financial assistance of the *Field* Fund, has set on foot an investigation into the etiology of the disease, but the experiments cannot be hurried, and the results will not be available for some time. The only point of importance in the recent report (BRITISH MEDICAL JOURNAL, April 12th, 1924) was what we understood to be an expression of disbelief in the theory that *B. bronchisepticus canis* was the causal organism, thus confirming the opinion held by most veterinary clinicians for many years. Meanwhile the opinions expressed by Mr. Livesey will be read with interest. He gave a clinical survey of simple distemper based on his long experience of the disease, which he considers is, as usually described, distemper *plus* many complications; the simple uncomplicated disease, he said, shows only a rise of temperature associated with a rash on the skin or mucous membranes, a nervous disturbance, and probably a nephritis. As soon as the rash appears the fever declines. Any other symptoms are, he considers, due to secondary infections, as, for instance, by *B. bronchisepticus*. Even in the uncomplicated disease convalescence is slow and tedious. He believes that infection is not, as is generally supposed, through the respiratory tract, but through the mouth. His clinical experience is that to keep the mouth of healthy young dogs clean by the use of hydrogen peroxide is the most certain method of prevention. The same treatment applied in the early stages of the disease is also the best method of avoiding complications. On account of the similarity of the symptoms to certain of the other virus diseases (such as foot-and-mouth disease and variola) he suggests that distemper might be treated preventively by methods similar to those used in these diseases. We understand that certain practitioners claim considerable success in the prevention of canine distemper by the use of ordinary calf lymph such as is used for variola. Livesey considers that if the complaint is diagnosed early, before it becomes complicated with secondary infections, the best treatment consists in swabbing the mouth frequently with hydrogen peroxide, feeding the animal on raw milk, and careful nursing.

NUTRITION AND DISEASE.

There is a tendency to assume that disease is always—or nearly always—due to the presence of some noxious substance in the body. In many cases this is so, but Dr. Orr, of the Rowett Institute, pointed out, in a paper read on September 10th, that dietetics must also play an important part in sickness and its prevention. He paid particular attention to deficiencies of minerals in diet. Calcium and phosphorus are required in greater amounts by the body than are any other minerals, and deficiency of either may lead to rickets. Iron and iodine are also essential food constituents, and their absence has serious results in the young animal. It has recently been shown that the actual proportion of these elements is important. Too much phosphorus, for example, interferes with the assimilation of calcium. Moreover, the trouble is not always confined to the affected animal, for calcium deficiency before conception may be detrimental to the developing young. Apart from the direct action of these salts, their absence is of importance in the fight between the body and invading micro-organisms. In autopsies of experimental animals fed on some deficiency diet gastro-intestinal lesions are very commonly found. The connexion between tuberculosis and deficient nutrition has long been recognized, and respiratory diseases are much more common in animals with an ill balanced ration. Direct evidence is tending more and more to support McCarrison's dictum that "perfect food affords protection against the ravages of bacteria and other pathogenic organisms as adequately as does segregation or immunization." In the more particular application of the paper to the domestic animals, Orr points out that a growing pig may put on 2 lb. of living tissue a day; a cow may secrete 12 lb. of solid material daily, and a hen lay 200 eggs in a year. The importance of supplying a well balanced ration in these cases is very obvious—from both an economic and a hygienic point of view. Orr suggests that the prevalence of tuberculosis in cows may in part be due to the failure of the ration to support the enormous milk yield. Under natural conditions animals adjust their diet according to instinct. Domestication prevents this free choice, and the resulting problems of malnutrition must be faced. Information on the optimum diet is still very meagre, and there is urgent need for research to determine the requirements for all the constituents of food which are known to be essential, and the connexion between specific defects and the correlated pathological phenomena.

THE GENETICAL ASPECTS OF STERILITY.

In a paper on this subject Dr. F. A. E. Crew made reference to the reasons for the sterility of hybrids among the domestic animals. Two of the most interesting cases are those of the mule and the cattalo. The mule is the offspring of a cross between a male ass and a mare; the reciprocal cross of the jennet (or female ass) and the stallion produces a hinny. The hybrid is hardier, more free from disease, and more economical to keep than the parents. Both mule and hinny, however, are sterile, the few reported exceptions not being above scientific suspicion. The female hybrid exhibits regular oestrous periods and plentiful follicules have been found in the ovaries. In the male, however, seminiferous tubules are absent or much reduced, while there is a complete lack of functional spermatozoa and seminal fluid. It is suggested that this is due to the great difference in chromosome number in the mare and male ass. The mare has 38 chromosomes, while the jack has probably 65, which would result in the inability of the cross to produce functional gametes. The cattalo is the result of the cross between the American bison bull and Hereford or Aberdeen Angus heifer. In every case the pregnancy is complicated by severe hydramnios, and most females abort. Only about 1 in 30 produce a living calf, and among these a male is a rarity. Dr. Crew considers that a sex-linked lethal factor is involved. By back-crossing of the females of the F1 generation with the bison or bull for several generations, hydramnios becomes less and less, and fertile males are ultimately obtained. Dr. Crew explained this genetically, and contended that in time dystocia, hydramnios, and sterility could be removed. He suggested also that the lethal factors might be endocrinal in nature.

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GALL STONES AND CANCER.

THE constant trauma to which the lining of the gall bladder is subjected by the presence of gall stones in the cavity is, in the opinion of many, the determining cause of carcinoma in that organ. This thesis rests principally on the fact that gall stones are found to be present in the great majority of cases; but the mere fact that they are sometimes absent seems to suggest that when present they play a subsidiary or predisposing, and not a prime, part in the production of the grave lesion. If we are to accept hospital *post-mortem* statistics, the liability of a person harbouring gall stones to develop cancer of the gall bladder is by no means negligible, and that liability is one of the chief arguments in favour of cholecystectomy rather than cholecystotomy; but, as gall stones usually give rise to little in the way of symptoms unless inflammations are superadded, the hospital figures may exaggerate the position. There are some authorities who deny to the gall stones any part—even a predisposing part—in the development of the cancer. According to them the reason why cancer of the gall bladder is so often associated with the presence of gall stones is that fragments are apt to be detached from the malignant mass and serve as nuclei around which the cholesterol in the bile deposits to form gall stones.

Much may be, and has been, said for each of these conflicting views without bringing us any nearer a general agreement, but the simple and striking experiments of Dr. Archibald Leitch, recorded in his British Medical Association Lecture published this week (p. 451), not only support strongly the view held by the majority of clinicians as to the inciting part played by gall stones, but constitute a distinct advance in cancer research. That investigators within the last few years have succeeded in producing malignant tumours in mice or rats by some animal parasites or by the frequent application of such substances as tar has been a great step forward, and cannot be dismissed as being merely of academic interest. The results of their experiments revived the irritation theory of cancer genesis. Assiduous as these investigators have been in the exploitation of the experimental method, they have not yet been able to bring forward proofs of the truth of the irritation theory in the case of the great bulk of human cancers; but when we are presented with cancers experimentally induced by pathological substances wholly elaborated within the human body, such as gall stones, the cogency of the argument is brought home to us, and we can appreciate the interesting developments that may be in store. The previous experiments in cancer production, and especially those of Dr. Leitch and his fellow workers at the Cancer Hospital Institute, seemed to indicate that the cancer-producing substances are not merely mechanical irritants, but must have something special in their chemical constitution, some specific stimulating property which affects the cells exposed to its action; there are, indeed, no very plausible examples of cancers in the human subject due to mechanical irritation. The experiments with gall stones, however, show that constant mechanical stimulation in certain instances can induce a malignant neoplastic reaction. The control experiments with pebbles—which we may suppose to be chemically inert, and which proved to be equally effective—conclusively dispel any lingering belief that the chemical composition of the gall stones was a factor in the production of the results.

Further interest attaches to these experiments in that this would appear to be the first time that a carcinoma of the glandular type has been produced, and the first time that a tumour has been produced in the guinea-pig. Till now the various irritants employed have brought about squamous-cell carcinoma or sarcoma, and attempts at inducing cancers of other varieties have failed; from this we may gather that only certain tissues of a susceptible animal are responsive to a particular type of cancer-producing agent. Yamagiwa, who was the first experimenter to use tar, was reported to have induced carcinoma of the mammary glands in rabbits by repeated injections of this substance, but the lesions he obtained seem to have been temporary tumours of the squamous type which underwent spontaneous cure. If it be the case that the guinea-pig has never been known to develop a carcinoma naturally, and that attempts have invariably been unsuccessful to induce a tumour in it experimentally by the use of other substances that have been effective in mice, rats, and rabbits, as Dr. Leitch states, the results with gall stones are all the more important, as they exclude several factors on which stress has been laid by the opponents of the irritation theory. The introduction of some obscure virus from without, the localization by the trauma of some supposed cancer virus present in the economy, or the precipitation of a general predisposition to cancer would seem to be ruled out of account. On the other hand, the very novelty of an induced cancer in a guinea-pig presents certain difficulties, as we have no established standard with which to compare it. In man and in other animals experience has led us to associate the quality of malignancy with certain characteristics—microscopical, anatomical, and clinical. In Dr. Leitch's experiments, where the evolution of the process from simple hyperplasia to invasive growth has been traced, the supreme demonstration of malignancy—namely, the formation of distant metastases—is wanting, but the invasion of neighbouring structures, such as the liver, omentum, and chest wall, by the proliferating glandular elements will doubtless be accepted by everybody as sufficient proof of the malignant nature of the tumours produced.

BACTERIOLOGY AND PREVENTION OF SCARLET FEVER.

FURTHER information is now available about the diagnostic possibilities in scarlet fever of the special streptococcal filtrate prepared by G. F. Dick and Gladys H. Dick, to which we have drawn attention in previous issues. On May 24th (p. 924) we referred briefly to a report by Dr. A. Zingher, assistant director of the Bureau of Laboratories in New York. He has now published in the *Journal of the American Medical Association* (August 9th, p. 432) a detailed account of experimental work on the Dick test carried out in normal persons and in acute and convalescent cases of scarlet fever.

The Dick test for scarlet fever is carried out in much the same way as the Schick test for diphtheria. Of a dilution of the soluble toxic filtrate from a culture

of the specific haemolytic streptococcus 0.1 to 0.2 c.cm. is injected intradermically in the right forearm for the test, and a similar amount of the heated toxin in the left forearm for the control. Positive reactions, indicated by a local area of redness, begin to appear in four to six hours, and reach maximum intensity in twenty-four hours after the injection. Thus the positive Dick test is quicker in appearing than the Schick test, which is most pronounced on the fourth day. At the end of forty-eight hours with the scarlet fever test positive reactions have faded considerably, and after a week there may be nothing but a slight pigmentation or fine scaling. When the reaction is negative no change is observed either at the site of the test or the control. The purpose of the control is to avoid confusion arising from hypersensitiveness to the protein constituents of the injected fluid. It is believed that, as with the Schick test for diphtheria, a positive reaction with the filtrate from the specific haemolytic streptococcus betrays absence of antibodies to scarlet fever toxin, and therefore susceptibility to the disease, and that a negative reaction indicates the presence of circulating antibodies, and therefore an immunity to scarlet fever.

The wide application of this test to normal persons has brought to light two considerations of great importance in the control of scarlet fever. When mothers and young infants are tested a great similarity is found in the antitoxic immunity of mother and infant; it is so pronounced as to lead to the conclusion that a definite placental transmission of antitoxic antibodies has occurred such as is known to happen for diphtheria. The infant usually retains its immunity up to the fifth or sixth month of life, and then begins to lose it. Dr. Zingher records the results of the application of the Dick test to more than 4,500 persons classified by age groups. The percentage of positive reactors rose rapidly from 44.8 per cent. in the age group 6 months and under to 70 per cent. for the group 1 to 2 years, and thereafter gradually fell. A second important fact made clear by the application of this test to the population at large is that the number of susceptible individuals is greater in higher social groups than among the less well-to-do. This has been established by a comparison of the percentage of positive reactors found in different types of schools and other institutions.

Turning from healthy people to acute and convalescent cases of scarlet fever, Dr. Zingher has much to say about the value of this test that will interest both the physician and the pathologist, though we must admit that his interpretation of certain irregular reactions does not clear away all the difficulties. It is possible that in the past we have been classifying more than one infection under the name of scarlet fever; it is also possible that the Dick test has not yet been elaborated to such a nicety that it will give the correct answer every time. The hundred per cent. successful type of test has too often proved a disappointment to physician and pathologist alike. But the unexpected responses to this test, remarkably few in number, are a field for future inquiry. They do not seriously detract from the author's claim that the striking results "afford good evidence of the value and reliability of the Dick test as an index of susceptibility or immunity to scarlet fever." Thus, every one of 141 patients tested during the first five days of illness had a positive reaction. Of 170 patients tested on admission to hospital and later during convalescence, 158, or 93 per cent., gave a positive reaction earlier in the disease and a negative reaction during convalescence.

The Dick test has two notable practical applications—namely, for detecting susceptibility or immunity to scarlet fever, and for gauging the efficiency of active immunization with scarlet fever toxin. In previous references to this subject we have drawn attention to the value of a test which enables us to discriminate between those likely and those unlikely to contract scarlet fever. If with wider experience its claims are substantiated it will have a future as assured as has the Schick test in the control of diphtheria. The same prominence has not been given to the other practical application of this test, though it may prove useful to the science of preventive medicine. In order to render them immune to scarlet fever Dr. Zingher has injected more than 1,400 persons who gave a positive Dick reaction with scarlatinal haemolytic streptococcus toxin. The dose of this toxin for prophylactic inoculation is standardized in terms of the skin test dose. Thus for adults a quantity of toxin equivalent to 1,000 skin test doses is used for the third and final injection, but for children lesser potencies. The reactions noted have been chiefly local, consisting of redness and swelling at the site of injection; in some cases, however, some general disturbance of health has attended the injections. To avoid such complications inquiries are now being directed towards the production of a purified toxin, or toxoid, such as seems likely to be useful in active immunization against diphtheria. In new work such as this it is natural that methods should be modified repeatedly as experience is gained. The aim of this active immunization with scarlet fever toxin is to render the subject insusceptible to the disease. In practice this means converting a positive into a negative Dick reaction. As judged by these standards Dr. Zingher has achieved a moderate amount of success, for of 274 children immunized with the toxin and recently retested, 167, or 61 per cent., had been converted to the negative group, and, it is assumed, rendered insusceptible to scarlet fever.

These are the immediate practical applications of this test, but they do not by any means exhaust its significance. If such a test as this could be relied on by the clinician for the actual diagnosis of the disease it would be doubly welcome, for the clinical picture of scarlet fever is often incomplete in cases hesitatingly confined to the scarlet fever ward. It may perhaps enable us to decide whether there exists one or more than one type of scarlet fever as judged by the etiological agent, and whether the different types (if they exist) correspond to recognizable clinical varieties of the disease. The new work from which we have been quoting leads to a conception of scarlet fever which ranges it very close to diphtheria. The haemolytic streptococcus which is believed to be the cause of scarlet fever has its home within the naso-pharyngeal mucous membrane, but the presence of this microbe alone does not determine illness any more than does the presence of the diphtheria bacillus in the throat. It is the toxin which is produced by this streptococcus which, being absorbed into the system of the patient, gives rise to the rash and constitutional symptoms. Scarlet fever must be looked upon, therefore, as a combined toxic and bacterial infection. The persistent immunity which follows one attack of the disease is an antitoxic immunity. It may not be accompanied by any considerable antibacterial immunity, for the streptococcus frequently survives in the secondary septic complications of the infection. The disappearance of the rash in scarlet fever and the return to health depend on the neutralization of the streptococcus toxin by newly formed antitoxin.

MEMORIAL TO SIR WILLIAM MACEWEN.

SHORTLY after the lamented death of Sir William Macewen a committee was formed at a meeting held in Glasgow to promote a fitting memorial to his life and work. At this preliminary meeting, which was attended by representatives of the University of Glasgow, of the British Medical Association, by many of Sir William Macewen's old assistants and students, and by numerous members of the medical profession, an executive body representative of different interests was appointed. It has now been decided that the fund should be applied to three main purposes, in the following order: (1) The provision of a bust of Sir William, by a sculptor of eminence, with a replica for Sir William's family; it is intended that the bust shall be placed in the University. (2) The establishment of a memorial lecture, to be known as "The Sir William Macewen Lecture," to be delivered annually or biennially; it is intended that it should be not merely a memorial oration, but should deal with any branch or aspect of surgical science. (3) The foundation of a Macewen medal or prize in surgery, to be awarded annually; it has not been decided yet whether this shall be assigned to the class of surgery at Glasgow University or shall be given a wider application. The committee aims at obtaining a fund amounting to £3,000, and towards this about £1,000 has already been received. Further subscriptions may be sent to the honorary treasurer, Mr. James Macfarlane, LL.D., Wesleyan Street, Glasgow, S.E. The chairman of the committee is Dr. A. Freeland Fergus, and Dr. Archibald Young is the honorary secretary.

GRADUATION OF GLASSWARE.

SOME time ago a joint committee, on which the British Medical Association was represented by Dr. J. S. Haldane, F.R.S., was set up at the instance of the Institute of Chemistry to report on the standardization of scientific glassware. The committee in its first report, issued recently, has recommended that the recognized international metric units—the *litre* (l.) and *millilitre* or thousandth part of the litre (ml.) shall be used as the standard units of volume, and that standard volumetric glassware shall be graduated in terms of these units and marked *ml.* instead of *c.cm.* The committee has been in consultation with the National Physical Laboratory, Teddington, which has issued a revised edition of its pamphlet on tests of volumetric glassware. These tests are done in the metrology department and are of two classes: Class A tests apply to vessels intended to possess the highest accuracy, and Class B tests to vessels intended to possess only commercial accuracy. The pamphlet gives full particulars of the nature of the tests and of the charges made. Vessels are also graduated according to the G.W.A. unit. This is a contraction for "grams of water in air," and signifies the volume at 60° F. of a quantity of water which when weighed in air against brass weights has an apparent weight of one gram. Copies of the pamphlet and forms of application for tests to be made can be obtained on application to the Director. The joint committee points out that the success of its work must depend on the action of purchasers; it therefore urges educational authorities when purchasing volumetric glassware to specify that the apparatus must have passed Class A or Class B, or in the case of Class B is guaranteed by the vendor to comply with the National Physical Laboratory regulations. The manufacturers' representatives on the joint committee have undertaken to replace any article guaranteed by themselves and found not to fulfil the requirements of the National Physical Laboratory for Class B. The joint committee realizes that for teaching purposes economy in initial outlay on apparatus is a necessity, but feels confident that, subject to a satisfactory demand, manufacturers will be able to supply guaranteed Class B apparatus at prices consistent with reasonable economy. The committee believes also that it will be found ultimately more economical for advanced work and research, for which apparatus of doubtful accuracy cannot be tolerated and calibration is essential, to purchase tested Class A apparatus rather than to purchase untested apparatus and carry out a calibration after purchase. The committee urges that in no circumstances should orders for volumetric glassware be placed without definite limits of error being specified, as failure to do so tends to encourage the production of inferior apparatus in which quality and accuracy are unduly sacrificed to cheapness. Some of the cheaper calibrated apparatus is known to be so inaccurate as to lead to grave errors even in the most simple determinations. The committee believes that the simplest and most satisfactory way of specifying limits will be to refer to the National Physical Laboratory tests as indicated above.

LONDON PARKS AND RECREATION GROUNDS.

THE far-sighted people who, even in the first half of the nineteenth century, began to agitate for the preservation and extension of open spaces in London, and the acquisition of new parks and gardens as the town grew, were wise in their generation. They could point to the way in which the string of parks extending from Kensington Gardens through Hyde Park and the Green Park and St. James's Park to the Governmental offices in Westminster added to the freshness of the air and the amenity of life; they could fight to stop encroachments on Hampstead Heath, and even successfully for its extension, but they did not despise small things, for much may be done with a graveyard converted into a garden; a graveyard in North Country phrase is the church garth, and the word "garth" meant and means any small enclosure immediately about a house. In addition to what has been done on a large scale, many small areas, ranging down to triangular spaces only a few yards square between two roads, have been secured. The pioneers obtained the appointment of a Select Committee of the House of Commons, which led to the passage of the Metropolitan Commons Act in 1866, prescribing the procedure under which the commons near London could be permanently secured. In this way Blackheath, Clapham Common, and a number of small open spaces were brought under the management of the Metropolitan Board of Works, but in 1874 the Commons Preservation Society had to fight hard with the Corporation of the City of London before Epping Forest was committed to the charge of the latter body. The London County Council, which succeeded the Metropolitan Board of Works, has obtained further powers and has used them well. It has recently issued a pamphlet, one of a series of handbooks on what the Council does for London, describing London parks and open spaces. The biggest areas it manages are Hainault Forest (805 acres), saved through the initiative of the late Mr. Edward North Buxton, and purchased, with the help of the Essex County Council, the Corporation of West Ham, the District Councils of Leyton and Ilford, and private subscriptions, and dedicated to the public in 1906; Hampstead Heath, with its dependencies—Golder's Hill, Ken Wood, acquired by the Ken Wood Preservation Council and presented to the County Council this year, and Parliament Hill; northward there is Finsbury Park (115 acres), and eastward the Hackney Commons, Hackney Marsh (340 acres), and on the riverside facing Greenwich Hospital the picturesque little Island Gardens, of 3 acres, as well as many more. South of the river there is Battersea Park, of nearly 200 acres, one of the best examples of how to lay out a town park we know; it was acquired by the Government when the river

embankment was formed, and was opened in 1858, so that the planting then done is now in its best stage. Not all the open spaces are controlled by the County Council; some of the most important, in or just outside the London area, are in the hands of the Corporation of the City of London, including Burnham Beeches (375 acres), Coulsdon Commons (347 acres), Epping Forest (5,560 acres), and West Ham Park (77 acres). A number of small areas are looked after by the councils of metropolitan boroughs, and in considering Greater London we must not forget Richmond Park (2,358 acres), Bushy Park (994 acres), Hampton Court Park and Gardens (820 acres), Kew Gardens (299 acres), as well as the areas quite in London, including Regent's Park and Primrose Hill (472 acres) and the Chelsea Hospital grounds (8 acres). Altogether it may be said that London is not badly off for parks and recreation grounds, and if only as serious efforts were made to cleanse the atmosphere as have been made to save open spaces it would be a reasonably pleasant place to live in. It is already statistically very healthy.

THE RATIONALE OF RADIATION THERAPY.

IN an article in the current number of the *Journal of Radiology* (August, p. 296) Dr. Robert Knox discusses the mode of action of radiation in bringing about the cure of certain diseases, and the nature of their effects upon cancer cells. He has a good deal to say about the so-called lethal carcinoma dose, and about the importance of the indirect effects of the rays, particularly upon the blood. To illustrate his thesis he uses the blood counts in a typical case of myelogenous (spleno-medullary) leukaemia; on comparing the series of counts it is seen that for a period of nearly two months following the last irradiation of the spleen the blood, on each occasion on which it was examined, definitely showed changes indicating progressive improvement; the red cells steadily increased whilst the whites as steadily diminished. These changes are to be attributed not to the direct but to the indirect action of the x rays. Dr. Knox maintains that while it is theoretically possible to administer a lethal dose to a cancer cell or to a group of cancer cells, it is practically impossible, in at any rate the large majority of cases treated clinically, to administer such a lethal dose to all the cells of a large tumour; it is essential, therefore, that the indirect effects of radiation should be studied. If we are ever to deal successfully with new growths by means of radiations some other method than that of the single intensive dose must be found. The suggestion, therefore, is made that the dose should be spread over a considerable period of time, by intermittent administration, so spaced out as to maintain a fairly continuous biological reaction. Research is urgently needed; if the actual biological and biochemical changes induced by radiotherapy were to be discovered, a great step forward would be made towards settling the dose and method of application to achieve the control, if not the cure, of malignant growths.

FREE HYDROCHLORIC ACID IN CANCER OF THE STOMACH.

GREAT reliance has been placed on the absence of free hydrochloric acid as a diagnostic sign of carcinoma of the stomach. This absence has been noted by different observers in from 77 to 90 per cent. of cases, but it is generally recognized that hydrochloric acid may be absent in other conditions, and, on the other hand, that it may be present in excess even in true gastric cancer. The sign, therefore, is by no means specific. Since the advent of the fractional method of gastric analysis we have had more precise evidence as to the value of the finding. Hartman,[1] who examined 551 cases of gastric carcinoma at the Mayo Clinic, noted achlorhydria in about half, hypochlorhydria in 15 per cent., normal acidity in 20 per cent., and hyperchlorhydria in 7 per cent. In view of the fact that the histological criteria of malignancy of gastric ulcers which prevail at the Mayo Clinic have not met with uncritical acceptance amongst pathologists elsewhere, confirmation of Hartman's findings was desirable. This seems to be supplied by results recently published by Friedenwald and Bryan.[2] These observers collected the analyses of 100 cases of carcinoma of the stomach at all stages. The localization of the growth was determined either at operation or by autopsy in 42 of these, but as far as could be ascertained the pylorus was involved in 56, the cardia in 7, the body in 21, and the growth was general in 16. Fractional analyses were made in all cases. The results showed that 52 had achlorhydria, 16 had hypochlorhydria, 26 were of normal acidity, and 6 had increase of free hydrochloric acid. When these figures are compared with those obtained from a single analysis after the Ewald test meal it is evident that the larger figures furnished by the latter are misleading, since free hydrochloric acid may still be present at some period during digestion when the gastric secretion is examined by the fractional method. If the authors had been guided by the results of the Ewald test meal alone they would have found achlorhydria in 79 per cent. of their cases; but as hardly more than half of their cases had achlorhydria when tested by the more exact method, too much importance should not be attached to the absence of free hydrochloric acid as a necessary sign of gastric carcinoma.

INCOMPLETE STATISTICS.

IT is curious to reflect that of all the diseases that beset mankind there is hardly one on which reliable statistics are available. On diphtheria there are, it is true, several carefully collected groups of figures; on syphilis there are isolated sets of figures of considerable value; likewise on malaria, cholera, and dysentery. But on cancer, cardiac disease, gastric disease, renal disease, nervous disease, and the great group of non-tuberculous respiratory affections, there are, we imagine, none which a statistician can regard with favour. Yet he who is interested in the treatment of tuberculosis is rapidly coming into a position in which he may weigh the value of the various hygienic, surgical, and therapeutic measures he may employ to assist the recovery of his patients. This improvement in respect of tuberculosis may be attributed to three main factors. In the first place tuberculous patients tend to be segregated into institutions where they can be observed by physicians whose attention is undistracted by other types of disease. Secondly, there are sufficient patients in these institutions to allow of the treatment of large numbers along the same lines, and of a comparison of the results with correspondingly large numbers of cases treated along different lines. And thirdly, there exists in the best sanatoriums a system of conscientious following up of the after-histories of the patients. Now these are very simple reasons, and if things were better ordered there should be no real obstacle in the way of obtaining similar statistics for other diseases. This is not done because under the present hospital system patients suffering from any given disease are distributed throughout a variety of institutions, where they are treated by a large number of physicians and surgeons, all working along their own individual lines. There is no uniformity of distribution; there is no uniformity of treatment. And as to the following up of the after-histories of these patients, there has, with one or two exceptions, been

[1] *Amer. Journ. Med. Sci.*, February, 1922.
[2] *Journ. Amer. Med. Assoc.*, July 26th, 1924, p. 265.

very little real attempt to touch even the fringe of the problem. One remedy for this would be segregation of all cases of one disease into large institutions, where carefully controlled treatment could be applied. But to this plan there are so many obvious objections apart from the administrative that there is no need to enumerate them. We can see, however, no reason why every hospital should not set about following up the after-histories of the patients who have been treated for certain well defined affections by certain fairly definite modes of treatment. This is not so large an undertaking that it could not be carried out by a small clerical staff working under competent direction. Take, for example, the surgical treatment of cancer of the breast or the stomach or the colon: how many surgeons in London or other big medical centres can give reliable estimates of the expectation of life of their patients after operation? In every teaching hospital there will be found monstrous tomes of notes—taken for years, and many for scores of years—dealing with the histories of thousands upon thousands of patients. There they stand, neatly piled in dusty rows, filling great shelves which groan under their weight; but only very rarely is any use made of them. They represent potentially valuable material. And if only the finishing touch were put to them, if only the end-results of all those cases were ascertained, a mass of information of very real and lasting value would be made available to the inquirer. These lugubrious reflections were prompted by the receipt of the twenty-sixth annual report of the Loomis Sanatorium, New York—an institution which issues every year figures relating to the patients treated during the previous twelve months. The present statistics refer to the year 1923. It is interesting to note that as regards immediate results of treatment there appears to be a correlation between the length of stay and the degree of recovery. A calculation shows that whereas those patients who reached the quiescent stage were in residence for an average period of forty-eight weeks, those who were discharged as arrested made a stay of sixty-seven weeks. This is a point of interest, as not only has the same observation been made in other sanatoriums, but it serves to show the importance of not attempting to hurry unduly the recovery of the patient. It would be of considerable value if every sanatorium adopted the practice of publishing an annual report giving quite briefly the figures for the previous year, the number of patients admitted, the groups into which they fall, and the immediate results of treatment; and every ten years they might be collected and collated, and published under the supervision of an expert statistician with a full statement of the after-histories. This plan is well worthy of serious consideration.

CONTROL OF PARATYPHOID EPIDEMICS.

COPENHAGEN seems to be almost completely free from typhoid and paratyphoid fever, and when small outbreaks occur they are not infrequently traced to the returned holiday-maker, who has sought health during the summer months in a resort with bucolic standards of sanitation. Tracing the sources of typhoid and paratyphoid epidemics in Copenhagen and Fredriksberg to foci of infection in the rural districts is an occupation into which the sanitary authorities in Denmark evidently enter with zest and skill, to judge from a paper recently published by a Danish medical officer of health, Dr. Djörup,[1] whose tale has a moral. On September 17th and 18th, 1923, two children were notified as suffering from paratyphoid B in a district in Fredriksberg which had hitherto been immune to this disease. The children lived in neighbouring houses, but did not know each other. Their milk supply came from the same farm, and on September 22nd a man who had consumed milk from the same source was admitted to hospital suffering from paratyphoid fever. A visit of inspection to the farm showed the cowshed to be clean and the forty-five cows to be healthy-looking, well cared for, and well fed. All the inmates of the farm were also found to be healthy. But on the other side of the main road there was an insanitary, neglected old house in which the married employees and their children were accommodated by the farmer. The latrines and drains were in a bad state, and tucked away in a room under a large quilt were two children who proved to be suffering from paratyphoid fever. Altogether six inmates were found to be infected, and one of them was a milkmaid who had felt very ill a few weeks earlier, but had continued to milk the cows morning and evening without informing her employer of her illness. To make sure that the source of the paratyphoid bacilli was human only, Dr. Djörup had samples of milk taken from each udder of every cow, but in no case could pathogenic germs be found. The milking utensils having been sterilized and a new staff of milkers provided, the restrictions on the sale of the milk were withdrawn, and no further cases of paratyphoid fever occurred. With this incident as his text Dr. Djörup argues that official sanitary supervision of cows and their sheds gives but a partial guarantee that the milk is free from infection, so long as the workers employed in the milk trade and their families are not subjected to periodic medical inspection. "Of what use," he writes, "is a bi-monthly inspection of the farm's stock by a veterinary surgeon so long as the farm's staff remain uncontrolled and may continue at work in spite of a variety of diseases which may be passed on to the consumers of the milk?" He calculates that medical inspection once or twice a week of the personnel of farms selling milk ought not to add more than 1 öre (approximately a tenth of a penny) to the cost of a litre of milk, and that the benefit accruing would be greater than that following the maintenance of a definite standard for the fat content of milk. But why depreciate the value of this standard to emphasize the importance of medical inspection of milkmaids?

[1] *Ugeskrift for Laeger*, April 3rd, 1924, p. 291.

THE WELFARE OF THE BLIND.

THE annual report of the National Institute for the Blind for the financial year 1923-24 is a most interesting and comprehensive document. The institute is the largest institution for the blind in the world. Its work embraces the care of the blind of all ages and in every class of society. It provides for the infant born blind, and for the old man and woman whose sight has failed them. It assists the artisan in learning and getting suitable manual work, and also the undergraduate at the university. Its activities during the past year may be measured by the sum-total of its budget—£193,769. At the end of last year it was faced with a very grave situation owing to a heavy financial deficit on the previous year's work. This year the position is greatly bettered by the successful result of an appeal for funds, so that with rigid economy it has not needed to cut down or close any of its departments—indeed, it has been able to extend them in two valuable directions. A second Sunshine Home for blind babies has been opened at Southport to serve the North of England; and for old blind people a weekly newspaper in Moon's type has been established. This newspaper is a great boon to those old people whose blindness cuts them off from ordinary literature, and whose age prevents their learning the more difficult and complicated Braille. Moon's type, invented by the late Dr. Moon, is a simple variation of ordinary roman letters. When these letters are embossed on strong paper they can readily be distinguished by the relatively insensitive fingers of calloused old age. The large space this type fills makes

it necessary to condense the matter printed, so that little more can be given than the terse items of news that we are accustomed to see jerked out of a tape machine. The report gives a reproduction of the first issue of this weekly newspaper, both in Moon's type and in ordinary print. Each copy costs sixpence to produce, but is sold at twopence. Over 5,000 were issued in the year. The College for Blind Girls at Chorley Wood is doing well; it now has thirty pupils, and its finances are on a better footing; of a total cost of £5,000, some £3,000 is met by college fees, £1,000 by donations, and the deficit, about another £1,000, is made up out of the general funds of the institute, but last year the institute had to make up a deficit of over £3,000. This college for girls with little or no sight is the only one of its kind; it gives a first-class public school education to girls of the professional class. It deserves to be better known. Last year one of its pupils passed Responsions and was admitted to a college in Oxford University. H.R.H. Princess Mary (Viscountess Lascelles) is now president of the college. The School of Massage is doing excellent work; by arrangement the women students are now able to attend St. George's Hospital, and the men the Middlesex Hospital, for practical work. Although the head office of the institute (224, Great Portland Street, London) exercises general control, there is such decentralization of activity as prevents loss of the personal touch which local endeavour furnishes; so that we find that there are branch areas and offices in Manchester, Newcastle-on-Tyne, Leeds, Sheffield, Liverpool, Leicester, Birmingham, Cardiff, Oxford, Cambridge, Exeter, Bristol, Brighton, and Southampton. The report gives terse accounts of each of the several branches of its activities, together with a statement of the working expenses of each.

THE QUEEN ALEXANDRA SANATORIUM FUND.

THE Queen Alexandra Sanatorium in Davos was originally founded to provide sanatorium treatment in an alpine climate for persons of the English-speaking nationalities suffering from curable tuberculosis who were unable to afford the ordinary expenses of such treatment. The war brought its work to an end in 1915, and in 1922 the sanatorium buildings were sold. The sum of money thus realized was invested, and the interest is devoted to assisting a fixed number of selected patients to obtain sanatorium treatment at a cheaper rate during the winter months at the Hôtel Frei at Davos Platz. On October 14th, 1922 (p. 698), we gave details of this new arrangement, which commenced in the autumn of that year. The system of grants then adopted was continued in 1923-24, the amount of the grant being based on the supposition that the total weekly expenses of a patient would approximate £5, and that the grant would reduce this to about £2 10s. This estimate was found in practice to be fairly accurate. The number of grants was limited to twenty-eight, not only by the amount of money available, but also by the capacity of the Hôtel Frei. Suitable applicants receive a contribution towards the cost of board and lodging, together with the whole cost of medical treatment and nursing, for a period of about six months. During this last year it was possible to continue some of the grants during the summer, and on April 30th, 1924, fifteen patients, one just admitted, were still in residence. During the summer of 1923 the balconies on the south-east side of the building were covered in and converted to the loggia type, which has increased the possibility of sun-bath treatment, and, together with other improvements, has added to the comfort and convenience of the patients. The annual report of the fund, which we have just received, covers the period from October 15th, 1923, when the sanatorium was reopened for the winter, to April 30th, 1924. The average duration of stay of patients was 164 days. The winter was a very fine one, with abundant sunshine, offering the best possible conditions for treatment; the snowfall was about 20 feet. The daily cost of each patient was approximately 16 francs, of which the patient paid 7½ francs and the fund 8½ francs. The honorary secretary of the fund is Mr. D. Vesey, 3, Camp View, Wimbledon Common, S.W.19. The visiting physicians at Davos are Dr. A. F. Bill and Dr. Florian Buol.

THE LEAGUE OF NATIONS AND THE TRAFFIC IN DANGEROUS DRUGS.

THE committee appointed by the Council of the League of Nations to prepare the agenda for the two conferences to be held in November next at Geneva, to which allusion was made in the JOURNAL on February 16th and April 12th, has, we understand, completed its task. Last month these programmes were considered by the Advisory Committee on Opium, which will present a report thereon to the Council and Assembly of the League. It will be remembered that the objectives of the two conferences to be held in November are the effectuation of Chapter II of the Opium Convention of 1912, which envisaged the gradual and effective suppression of the manufacture of and traffic in "prepared" opium, or opium used for smoking, and the restriction of the production of opium and coca leaves to the requirements for medical and legitimate purposes. Some differences of opinion have, it is understood, been disclosed in the course of the deliberations. The British, American, Dutch, and French members have viewed the question of restriction of output from somewhat different angles. Some would attack the problem at the source—that is, the growth of the poppy and the coca shrub; others would direct attention to manufactured products, or to more effective measures for the control of national and international traffic. American opinion is tending towards advocating the entire suppression of heroin, as being a drug especially resorted to in the United States by the criminal classes. The attitude of the Indian Government has given rise to further criticism, but from a resolution recently passed by the All-India Congress Committee it would appear that popular opinion is coming round to the view that opium traffic for revenue must be abolished and the production of the drug restricted to medical requirements.

THE BRITISH ORTHOPAEDIC ASSOCIATION'S VISIT TO ITALY.

FOLLOWING a precedent set last year, when the British Orthopaedic Association held a meeting with Dutch orthopaedic surgeons at Leyden and Amsterdam, its members will visit Bologna this month, on the invitation of Professor Putti, who has arranged a programme of work at the Rizzoli Orthopaedic Institute on September 22nd and 23rd. This institute comprises a very complete and extensive orthopaedic hospital, as well as workshops of various kinds. Afterwards the members will travel by motor car from Bologna to Cortina di Ampezzo in order to see the Codivilla Institute there and study heliotherapy as there practised. A drive among the Dolomite Mountains to Bolzano—better known by its German name of Bozen—will end what promises to be a most interesting and instructive excursion. At Bolzano the train will be taken for home.

SIR DAVID and LADY FERRIER celebrated their golden wedding on September 3rd. Sir David Ferrier has retired from practice, but, as Sir Charles Ballance reminded us a fortnight ago, retains all his old interest in the advancement of medicine by research. He is a lively proof of the saying that hard work never did anyone any harm.

DR. G. H. SIMMONS,

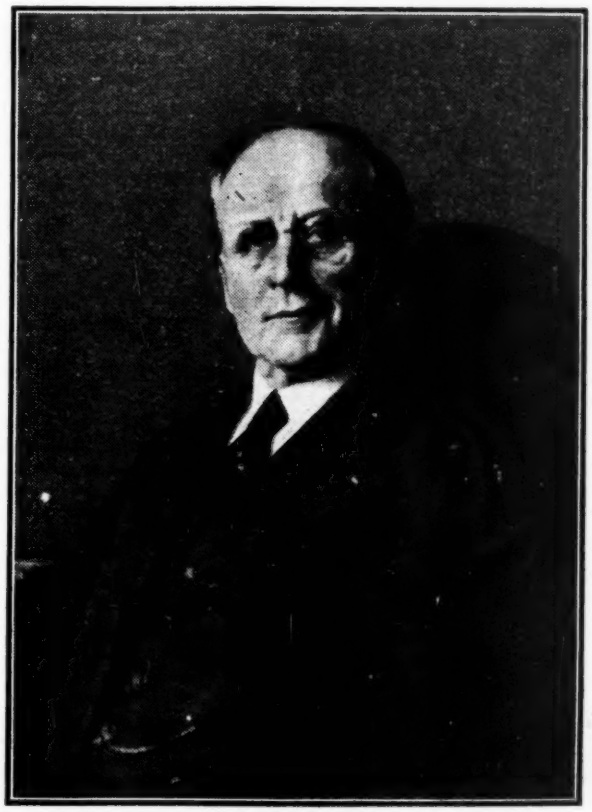
EDITOR OF THE "JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION."

DR. GEORGE HENRY SIMMONS, who has been for twenty-five years Editor of the *Journal of the American Medical Association*, having entered his 73rd year, has intimated his wish to retire. On June 9th, during the annual meeting of the American Medical Association, he was entertained at a banquet and presented with his portrait. After the banquet a series of speeches was made.[1]

Dr. Harvey Cushing.

The first was by Dr. Harvey Cushing, who spoke about Simmons as editor, publisher, and writer, and incidentally gave some account of Dr. Simmons's career. Dr. Cushing had his joke about what could be done with an Englishman if he could be caught young, for Dr. Simmons was born at Moreton-in-Marsh, Gloucestershire, and went to America at the age of 18. He became a student of the University of Nebraska, and first took a degree from the Hahnemann Medical School, but finding that his aspirations would not in this way be satisfied he began over again and graduated from Rush Medical College, Chicago. He practised in Lincoln, Nebraska, founded the *Western Medical Review* there, and was secretary of the Medical Society of the State from 1896 to 1899, when he was appointed Editor of the *Journal* and Secretary of the American Medical Association. That Association had been founded in 1847 and its *Journal* had been established by Dr. Nathan S. Davis in 1882. But neither the Association nor the *Journal* had been conspicuously successful. After Dr. Simmons's appointment there was a great change. The circulation of the *Journal* went up from about 12,000 in 1900 to nearly 90,000 at the present day. It stood, Dr. Cushing said, for clean journalism; not only did it begin the crusade to eliminate undesirable advertising, but through precept and example the same issue has been forced on all the other journals of the country. Once and for all it has been shown that a medical publication can be so conducted without the financial support of questionable advertising that there will be a large profit. And this surplus has been turned back into the publishing business which, under Simmons's fostering care, has grown astoundingly. Dr. Cushing mentioned the publications of the American Medical Association:

A Spanish edition of the *Journal*; the *Archives of Internal Medicine*; the *American Journal of Diseases of Children*; the *Archives of Neurology and Psychiatry*; the *Archives of Dermatology and Syphilology*; the *Archives of Surgery*—much needed repositories of the more lengthy and serious scientific papers which the general practitioner has little inclination to read. And then there is *Hygeia*, the purpose of which is to disseminate health news in proper guise to the laity in place of the medicine doled out to them in lurid form in the daily press—a magazine deserving of introduction into every household. But these are not all. There is the *Quarterly Cumulative Index*; the Section *Transactions*; a series of useful Handbooks for the Practitioner; the publications of the Council on Pharmacy and Chemistry; the publications exposing nostrums and quackery; the publications of the Council on Health and Public Instruction, all the way from the care of the baby to those valuable papers fostered by the Bureau on the Protection of Medical Research; the publications of the Council of Medical Education and Hospitals, and much more, beside that colossal and invaluable volume of 2,500 pages now in its ninth edition—the *American Medical Directory* of over 160,000 physicians.



G. H. SIMMONS.
(From a painting by Arvid Nyholm.)

Summing up, Dr. Cushing said that the American Medical Association has stood for definite reforms relating to the elevation of professional standards such as: (1) the establishing of State examining bodies to act as licensing boards in place of the diploma-giving schools; (2) the improvement of medical education by the raising of preliminary requirements and lengthening of the course; and (3) the regulation of pharmaceutical matters and of "patent" and proprietary medicines.

Dr. William S. Thayer.

Next Dr. William Thayer spoke of Simmons as a man, and described him as a model of industry and persistency and equanimity and modesty and efficiency, in whose heart there lay treasured visions and ideals. Dr. Thayer concluded by expressing the hope that the portrait so admirably done by Mr. Arvid Nyholm would be a lasting memorial of the admiration and respect for the motives and ideals by which Dr. Simmons had been guided, of gratitude for his service, and of pride in his achievement.

Dr. William Mayo.

Mr. Hubert Work, Honorary Secretary of the Interior, followed with an appreciation, and Dr. William Mayo then spoke of Dr. Simmons's work for medical education. Character, he said, had made the *Journal*, and it had required character of the highest type to maintain its standards against every sort of onslaught. Graduation from a medical college, Dr. Mayo said, meant commencement, though to a few members of the profession it meant the ending of scientific medicine and the beginning of a trade. Fortunately the larger number of practitioners were earnest students of medical journals. To-day, the majority of books not ephemeral in character were compilations of an encyclopaedic nature or textbooks for the student, with a few highly specialized works useful only to a few. The profession as a whole kept abreast of the times by means of medical periodicals, which must be recognized as the greatest force in medical education. Nor had the education of the public in medical matters been neglected by the American Medical Association. The medical profession had been ultra-conservative, and in times gone by had permitted the public to be educated by the charlatan, the quack, the patent medicine vendor, and the almanac. The United States had suffered more than any other country from insidious forms of vicious propaganda, the purpose of which had been to break down the confidence of the people at large in scientific medicine. Through the section on Propaganda for Reform in the *Journal of the American Medical Association*, and through the journal *Hygeia*, which reached the people directly, steps had been taken to restore public confidence. Even greater than these achievements had been the work of the *Journal of the American Medical Association* through its able editor in weeding out the inferior medical schools of earlier days. Such schools had been a reproach to the medical profession; they had been a source of incalculable harm to the people

[1] Dr. Simmons, with characteristic self-effacement, refused to allow a report of the banquet to be published in the *Journal of the American Medical Association*, and it was only by a *ruse de guerre* that the Editor of the BRITISH MEDICAL JOURNAL, being unable to accept the invitation to be present at the banquet, has been able to obtain an account of the proceedings.

at large, and had done much to cause distrust of the profession. Dr. Simmons had been the leader in improving medical education in the United States.

A speech of personal reminiscences was then made by Mr. Will Owen Jones of Lincoln, Nebraska.

Dr. Simmons's Reply.

Dr. Simmons, when he came to reply, said that words failed him to express the joy and satisfaction with which he received a gift such as the portrait and a testimonial such as the gathering. When he assumed the editorship of the *Journal* the editorial, publishing, and printing departments occupied a single floor. The development in these departments had been a normal growth hardly noticeable from year to year, though looming large now. He had been fortunate in becoming the Editor of the *Journal* at an opportune moment. The end of the nineteenth century saw the end of some of the old theories and methods of treatment and practice and the beginning of scientific medicine based on research and demonstrated facts. Definite knowledge regarding the etiology and transmission of disease was taking the place of theory; pharmacology was asserting itself; drug therapy based on controlled clinical experience was taking the place of empirical prescribing. The application of newer knowledge revealed by bacteriology and biological chemistry was gradually eliminating guesswork in diagnosis. Naturally, the *Journal* reflected this progress.

Further, the time had become ripe for reorganization of the Association, which, though originally a delegated body, had lost its representative character. The reorganization of 1901 had provided a national business and legislative body—the House of Delegates—large enough to be representative, but sufficiently small to deliberate on the important questions that came before it. County societies, definitely connected with the State, were created; dormant societies became active; practitioners realized that the American Medical Association was an active vital force and that they were part of it, and a new professional spirit became apparent.

He had always believed and had always acted on the principle that the American Medical Association was primarily a scientific organization, with, for its chief function, the advancement of medical science and practice. The reputation of the Association with the public, which was becoming better every year, was due in part to the fact that it had given evidence by its work and by its publications that it was a scientific body, and that all its efforts were for the common good of the profession and the public, and were based on altruistic motives. While it was reasonable to boast of what had been done, the task, Dr. Simmons said, was never-ending. The Council on Medical Education had some unsolved problems, and so also had the Council on Pharmacy and Chemistry. Medical legislation, which was still in a state of confusion in the United States, was a vital question. The remedy lay in co-operation, and the problem now before the trustees of the Association and the Bureau of Legislation was to bring that about.

The Association had resolved to take the post-graduate school to the doctor in the field, and a plan to carry out this had just been adopted. It was hoped that in more than one district centre there would be within the next year ambulatory clinics, consisting of clinical and laboratory personnel, with mobile laboratory equipment available for demonstrating modern diagnostic methods and the application of rational therapeutics. The funds of the Association could be expended to no better advantage, so far as the individual physician was concerned, than by thus carrying directly to him the most recent advance in the progress of medical science. In conclusion, he said that while he had been fortunate in becoming connected with the Association at an opportune time, he had been equally fortunate in his associates and co-workers. For twelve years, from 1899 to 1911, he had served as Secretary of the Association, as well as Editor of its *Journal*, and was, therefore, an officer of the House of Delegates. During all these years, and since, he had felt that he had had the confidence and sympathy of practically all its members.

England and Wales.

A New Vaccination Order.

The Ministry of Health has issued a new Vaccination Order, dated August 22nd, 1924. As stated in the covering letter to boards of guardians, "The effect of the Order is to include in Form A the form of statutory declaration of conscientious objection to vaccination." In issuing the Order Mr. Wheatley has gone some way to placate the Anti-vaccination League, whose deputation waited on him early in the year. The league naturally wanted him to go much further. Some extremists, indeed, would wish Parliament to prohibit vaccination; most would accept the entire repeal of the Acts; others would be more or less satisfied with repeal of the "compulsory" provisions. What he has done is merely to restore to the document issued by local registrars at registration of birth the form of declaration by complying with which exemption can be legally obtained. It will be recollected that Mr. Neville Chamberlain, when Minister of Health, wisely issued an Order by which the form in question was no longer handed to the parent or guardian as a matter of course at the time of registration, but had to be applied for. On that point Mr. Wheatley declined to reverse this administrative act of his predecessor until a year's experience had been gained. Now that the year is nearly completed he has complied, and incidentally he will save the Antivaccination League, which appears to be very hard up, some expenditure in printing and issuing these forms on its own account, which function it adopted when Mr. Chamberlain took the action stated. We can believe that, as a former convener of the Public Health Committee of Glasgow, doubtless possessing some knowledge of that city's experiences of small-pox and vaccination, Mr. Wheatley would feel unable to yield more than he has to the importunities of the leaguers.

Since the above was written the organ of the league has published, in its September number, a letter addressed to its secretary by Mr. R. E. Abbott, "an ardent supporter" of the cause in Gloucestershire. Under date August 10th he writes:

"Last week a divisional summer school of the I.L.P. was held here, and Mr. Wheatley came down for the week-end. I took an opportunity of tackling him, and . . . told him of our disappointment with the result of the deputation, particularly as he was on a list of M.P.s favourable to our cause. He told me that that was a mistake—he had expressed himself as against vaccination, but that was ten years ago, and since then his experience on the Glasgow City Council had altered his opinion. I questioned him about this experience, and all I could get was that whilst their doctors and nurses (vaccinated) never took small-pox, several visiting clergymen (unvaccinated) had taken it. This, *plus* the fact that his daughter is a doctor and has assured him that she has studied both sides fully, is all that I could get out of him. He admitted to me that if there were no such laws he would require a thousand times as much evidence as he now has before introducing laws, however unanimous the medical profession might be. He did not listen to statistics—merely saying that he had had too much experience of statistics not to know that figures can prove anything. Further, he admitted that he was not a believer in vaccination for children, but would favour a law for compulsion for everyone in face of an epidemic. Altogether I must confess I was very impressed by his lack of imagination. He did tell me that if the society pressed the matter the form would be restored and sent with the other papers."

What Mr. Wheatley thinks of the league's publication of this letter, especially of the last sentence of it, at the present juncture we do not know, but if he can find time he—and other Members of Parliament subject to canvassing by the league—might usefully read the opening article in that remarkable American journal the *Saturday Evening Post* of August 23rd. The title of the article is "Government by Blackmail." It has reference to political conditions in America, but appears not to be without some application to this country.

WELSH BOARD OF HEALTH.

In the section of the fifth annual report of the Ministry of Health which deals with Wales, it is stated that there is reason to believe that the notification of tuberculosis is steadily improving, though it is still far from satisfactory. During the year 1923-24 a circular was issued to every medical practitioner in the Principality, explaining clearly his obligation in this matter. The several county and county borough councils have entered into agreements with the Welsh National Memorial Association, which undertakes the treatment of tuberculous persons from a national standpoint, and provides also for research work, for an educational campaign, and for close co-operation between the tuberculosis physicians of the association and the local authorities in the preventive aspect of the work. The present estimated net expenditure by the association for the year 1923-24 is £136,000, towards which the estimated aggregate contribution from the local authorities is £66,500. During the year residential treatment was provided at twelve hospitals and four sanatoriums, 1,331 beds in all, and dispensary treatment at fourteen central dispensaries and about ninety visiting stations. Kensington Hospital (100 beds), at St. Bride's, Pembrokeshire, was opened during the year for non-pulmonary tuberculosis in children, and considerable progress has been made in adapting and equipping a new hospital at Cefn Mably in Monmouthshire. The orthopaedic after-care of surgical tuberculosis cases is dealt with from three centres—the North Wales Sanatorium, Glan Ely Hospital, and Kensington Hospital; in this way a number of hospital beds are freed for new patients. No new centres for the treatment of venereal disease were opened during the year, and the number of approved centres remains at ten. The opening of the new out-patient department at the Cardiff Royal Infirmary has improved the facilities for treatment of venereal cases at this centre. The infant death rate for Wales for 1922 was 84 per 1,000, as compared with 87 in 1921, but the maternal mortality rate shows a slight tendency to increase. The number of maternity and children's welfare centres in existence on March 31st, 1924, was 234, as compared with 222 a year before. Of these 13 are provided by voluntary societies and the remainder by local authorities, two of whom have also established their own maternity homes, whilst 13 authorities have arranged for the treatment in private or public institutions of complicated or necessitous maternity cases.

ACCIDENT BEDS IN LONDON.

As the result of an offer of assistance by King Edward's Hospital Fund for London, fourteen additional beds for accident cases have been opened at King's College Hospital. This is the first result of the decision of the King's Fund, announced by H.R.H. the Prince of Wales at the special meeting of the General Council on July 25th, to apply the legacies of the late Mr. and Mrs. John Wells, estimated at over £200,000, to assisting the hospitals of London with extensions, improvements, and other special needs. The proposals which the Distribution Committee has under consideration are as follows:

(*a*) Assistance in the provision of additional hospital accommodation, including accommodation for accident cases, by grants towards capital expenditure on schemes of extension, or towards the reduction of deficits on schemes of extension that have been completed, or towards the opening of beds in extensions that have already been provided but are not yet available for the patients for whom they were intended.

(*b*) Assistance towards schemes of improvement as distinct from schemes of extension.

(*c*) Increased grants to maintenance, including the maintenance of additional beds.

The Prince of Wales pointed out that 1,600 beds had been added to the hospital accommodation of London since 1913, and that the schemes now in hand or proposed amounted to another 1,000. The Wells legacies by themselves would not, he said, enable the Fund to make all the grants it would have wished to make. The Distribution Committee would have to select the cases where extra help, given or promised immediately, would have the greatest effect and produce the greatest benefit to the voluntary hospital system in London. Efforts made by the hospitals themselves would be taken into account so that the grants may be not only a help but also a stimulus.

ILLUMINATION AT WEMBLEY.

At a conference on illuminating engineering held at the British Empire Exhibition on August 12th two papers were read on the methods adopted for the illumination of the exhibition. The huge amusement area is lighted by gas. The similar area in the White City was lighted by high-pressure gas with mantles. The improvements in the use of gas now make it possible to dispense with high pressure, which is costly. Standards fourteen feet high and sixty feet apart are fitted with strong lamps carrying superheaters with sixteen mantles each. The nominal candle-power of each standard is 1,600 foot-candles, and actual tests gave 1,590. The effect is that the light is of two to three foot-candles over the whole area, so that at 10 p.m. when there is no moon it is possible to walk and even to read a newspaper comfortably throughout the area. This is important, seeing that after lighting up over 96 per cent. of the people in the exhibition are in the amusement area.

In the exhibition proper electricity is the sole illuminant. The original scheme was for flood lighting of all the facias of the buildings from the roofs of adjacent buildings, so as to ensure that architectural features would not be distorted by defects arising from illumination from the ground level or sources at low altitude. This scheme has been carried through save in some places where conditions necessitated supplementary festoon lighting. Such a mode of illumination demands high-power lighting and good reflecting surfaces. The finest buildings are of concrete, which reflects only 25 per cent. of the light, so from two to five foot-candles are required for a good effect. Plaster and painted buildings require half the lighting. The long distances between the buildings made concentrated beams necessary, and this has been obtained by the use of low-voltage gas-filled tungsten lamps with concentrated filaments and deep short focus parabolic reflectors, directing 76 per cent. of the total luminous flux within an angle of less than 5 degrees, the highest concentration yet obtained with filament light. Silvered reflectors in air-tight cases are used. Several thousand of these projectors illuminating facias 300 to 1,000 feet distant are in use. The effect is brilliant, yet, according to Mr. H. T. Harrison, who read a paper on the subject, there is no unpleasant glare. The beautiful road standards, fashioned like a geographical globe, furnish 1,000 candle-power, but since the luminous area exceeds 900 sq. in. there is no glare. The interior lighting of some of the buildings has been effected by gas-filled lamps hung high within enamelled reflectors; these give a floor illumination of three foot-candles.

Mr. Leon Gaster gave accounts of two recent conferences on industrial lighting held at Geneva. A paper read there by Dr. Stassen on miners' nystagmus contained frequent reference to the prejudicial effects of inadequate lighting on vision. The International Illumination Commission recognized that regulations for industrial lighting should be based primarily on obtaining conditions essential to the health and safety of the workers, and that the present standards should not be enforced by law. But recommendations in the interest of efficient production would be welcomed. Emphasis was laid upon the need of increased propaganda work.

EXTENSIONS IN SURREY HOSPITALS.

An extension scheme has been planned in connexion with the Croydon General Hospital, which will cost some £250,000. Sufficient money has already been collected to begin the construction of a new out-patients' department and to enlarge two existing wards this year; other new buildings contemplated include a ward block for 42 beds, reorganization of the administration block, the building of a recreation hall, with a large operating theatre above, a special block to accommodate 20 paying patients, a laboratory, and a laundry. During last year 1,496 patients were treated in the wards, and 13,470 as out-patients, over 5,000 casualty cases being dealt with. The extension of the Royal Surrey County Hospital, Guildford, is being continued by the enlargement and rearrangement of the existing building on the west side of the hospital to provide extra accommodation for residents, an office for the

matron, and an increase of ward accommodation to the extent of 12 beds. A pathological laboratory is to be formed out of two rooms; two other rooms will be converted into isolation wards. The opening of the new out-patients' wing by the Duke and Duchess of York in April last was reported in our columns of May 17th (p. 880). The cost of the whole scheme, including the provision of additional endowments for maintenance, is £50,000, of which about £32,000 has been subscribed or promised, and legacies amounting to £10,650 have been allotted to this fund. These extensions when completed will increase the accommodation to over 80 beds, but later on further expansion will probably be necessary. It is proposed to add an additional floor to the Victoria Hospital at Woking; the new floor will comprise two wards, each containing 6 beds, and two single-bed wards. A new administration block is to be erected behind the existing building, and will contain anaesthetic and sterilizing rooms, an *x*-ray room, accommodation for casualty cases, and rooms for the nursing staff. The extension was commenced last September and is now well advanced. The cost will be about £18,500, of which all but £2,700 has been raised. A hospital has been erected at Carshalton, as a war memorial, on a more suitable site than that of the previously existing hospital, which it will replace. The accommodation provided consists of a ward of 12 beds for women, one of 6 beds for men, 6 wards for private patients, 3 sun rooms, a maternity ward, an emergency ward, and an *x*-ray room. The total cost of the scheme is in the neighbourhood of £20,000. A new hospital is to be built at Weybridge, with accommodation for 30 beds, at a cost of £32,000, and extensive additions are proposed at the Epsom and Ewell Hospital also.

Scotland.

GLASGOW MEMORIAL TO LORD LISTER.

THE statue to Lord Lister erected in Kelvingrove Park, Glasgow, will be unveiled on Wednesday next, September 17th, at 3 p.m. The Lord Provost of Glasgow, chairman of the Lord Lister Memorial Committee, will preside, and the statue will be unveiled by Sir Hector Cameron, C.B.E., M.D., Emeritus Professor of Clinical Surgery in the University of Glasgow.

SCOTTISH SANITARY CONGRESS.

The fiftieth annual congress of the Incorporated Sanitary Association of Scotland was held last week in Marischal College, Aberdeen, under the presidency of Dr. G. Matheson Cullen, one of the medical officers of the Scottish Board of Health. The president in his address referred to the question of the standardization of disinfectants, which he declared to be an exceedingly difficult one. At present the methods employed were, he said, of a chemical nature, and the association wanted another mode of estimation by which certificates could be given as to the real values of different disinfectants in ordinary conditions of life, such as in the home, in the byre, etc. Sir Leslie Mackenzie, medical member of the Scottish Board of Health, later delivered a lecture upon the outlook in preventive medicine. Thirty years ago, the lecturer said, the term "preventive medicine" meant merely the application of medical ideas to the correction of bad environment. This included the provision of good water supplies, good drainage, wholesome sites for houses, sufficient ventilation, clean and healthy food, and attention to the general conditions included in the nuisances section of the Public Health Act. The individual, however, was left alone, except when he became a danger to others as well as to himself. To-day, however, the aim of the public health movement was not merely to provide a healthy environment but to promote the best individual life. The world had become conscious of crowds of expectant mothers looking for skilled direction, and crowds of tender children struggling into life and asking for more room to breathe. One of the results of the war had been that in health administration the production of fitness had become an important consideration. This was not the mere production of fitness for nothing in particular except to go on keeping fit, but as a working ideal for civil life. It had been found by the recruiting boards during the war that out of every nine men of military age three were perfectly fit and healthy, two were on a definitely lower plane of health and strength, three could almost be described as physical wrecks, and the remaining one was a chronic invalid with a precarious hold on life. These figures were enough to justify an extended programme of curative and preventive measures for several generations to come. The play movement for children, the physical education movement for adolescents, and a reasonable physical care of the body for grown people—all had their proper place.

DEADLOCK IN SCOTTISH HOUSING SCHEMES.

The Scottish Board of Health has issued to local authorities a circular regarding the cost of houses included in tenders under the Housing Act of 1923. The Board draws attention to the progressive upward tendency of tenders for construction of houses, and suggests that, while the approval of the Board for tenders under this Act has not been necessary, concerted action should be taken to combat the rise in costs, which in its view is not justified. It is pointed out that in the spring of 1924 the Board was approving tenders for flats of three apartments costing £300 for each flat, whereas in recent months the cost for similar houses has increased by 45 per cent. Proposals for building under the Housing Act of 1924 will have to be approved by the Board of Health, and the Board is prepared to withhold its consent unless satisfied that the costs are reasonable. It is likely that the co-operation of local authorities will be forthcoming to keep down costs of building, because the State contribution is a fixed one and inflation of expenses will fall upon local authorities or their tenants. A deputation from the Middle Ward District Committee of Lanarkshire was recently received by the Board in regard to this matter. It was then pointed out that tenders had been received for building additional houses at prices which ranged from £351 for a two-apartment flat and £402 for a three-apartment flat to £490 for a three-apartment cottage, these costs being exclusive of land, roads, sewers, and other necessary incidental expenses. The Board was unable to give its consent to the erection of houses at such prices, which in its opinion could not be justified, having regard to prices of material and labour. The deputation, on the other hand, pointed out that the need for houses in the area was so great that some drastic steps would have to be taken without delay, and that every effort had been made to obtain the lowest prices for the work required.

Ireland.

THE BELFAST MENTAL HOSPITAL.

THE resident medical superintendent (Dr. S. J. Graham), in his report on the Belfast Mental Hospital for 1923, drops the old title "District Asylum." He reiterates the call that appeared in last year's report for new and up-to-date legislation: "the existing statutes do not sufficiently guarantee the proper treatment of the mentally afflicted"; "the Lunacy Acts require recasting to deal effectively with prevention and the incipient stages of mental diseases"; "early treatment in insanity is just as important as in other forms of disease"; "it seems pitiable that one of the worst forms of disease should be denied skilled early treatment, and that it is not until the mental symptoms have developed so far as to render the individual unfit to be at large that treatment commences, following certification and its present-day attendant stigma." It is well known that the Government of Northern Ireland has this need under consideration, and may be trusted, with the aid of its chief medical adviser (Dr. Dawson), to redeem the lunacy laws from medieval taint. To the ordinary reformer, however, and still more to the enthusiast, these parliamentary delays and procrastinations seem unpardonable, but with the distinguished medical men in the local parliament it is felt that advance is in safe hands.

MEDICAL ORGANIZATION.

Wicklow and Wexford medical practitioners met recently at Woodenbridge to consider the unsatisfactory position and prospects of the profession in the Free State. Dr. Hennessy, Medical Secretary, Irish Medical Committee, spoke on the Government's legislative proposals and the adverse conditions likely to occur if the profession were not immediately organized. A pledge, already adopted in Kildare and Meath, was signed by all present, binding themselves to the resignation of their offices or any other course deemed necessary by the Irish Medical Committee towards securing satisfactory conditions of medical service in Ireland.

Correspondence.

THE VALUE OF FRUIT AS A FOOD.

SIR,—It has often been levelled against the profession that more attention is devoted to disease than to the prevention of it, and one has only to pick up the current number of the JOURNAL to see that the accusation is not unjustified.

In the JOURNAL of August 30th there are two examples of this doctrine. A leading article deals with an investigation into the cause of chronic ulcerative colitis. Cultures were made from ulcers found in the intestinal tract, and, as was only to be expected, large numbers of organisms were discovered and found capable of producing the disease in animals. All this is very interesting, and the result will, of course, be a vaccine which we shall be advised to inject into our longsuffering patients with the usual unsatisfactory results. At its best, a vaccine can only give increased resistance in a varying degree.

Why not start these investigations at the other end?—for what goes in comes out. Here are the histories of two patients in this practice.

CASE I.

A woman, aged 22, was diagnosed to be suffering from ulcerative colitis, probably tuberculous and probably with more than one ulcer. Her mother stated that some time in 1920 she contracted the disease, losing her appetite, losing weight, and passing frequent bloody motions. In 1921 she was sent to St. Thomas's Hospital, where appendicostomy was performed, and she was given irrigations of silver nitrate. Her condition improved, and the improvement was maintained for some months with occasional relapses. In the summer of 1922 the appendicostomy wound had closed and the disease returned in its original severity. She became very emaciated, and had frequent bloody diarrhoea. A second operation was advised but was refused. Numerous drugs, including dimol and kerol, were tried without success; her diet was of the usual hospital invalid variety, with slight modifications. Early in 1923 she was put upon a strict diet of raw fruit and vegetables, and to-day she is fat and well.

CASE II.

A woman, aged 29, had the usual symptoms of membranous colitis—pain in the abdomen, vomiting, anorexia, and obstinate constipation, passing every few days large membranous casts of the intestines. High irrigations were given, laxatives such as paraffin, and antiseptics such as dimol and kerol, and drugs such as bismuth and chlorodyne; they produced little or no effect. She was fed upon such pappy foods as she could eat and her bowels were kept open with large doses of aperients. Later she was sent to the London Hospital, where she received much the same sort of treatment. Later still she went to the Royal Bath Hospital at Harrogate, where she had a course of Plombières treatment; her diet was at first milk, which she loathed and vomited, and it was then changed to tea, toast, eggs, and butter at her own request. During her month in Harrogate she lost 4 lb. in weight and a large quantity of membrane. However, her symptoms were alleviated and she vomited less, but was very weak and ill. On her return she was put upon a diet consisting of brown bread, butter, honey, fruit and fruit juices, and began to improve straight away. Vomiting and pain ceased, and at the end of the first week she had passed three well formed motions without the aid of aperients. The membrane gradually disappeared from the motions and she is now regaining her weight.

In both these patients the gums, which were very spongy, have considerably improved since fruit was made the chief article of diet.

Turning to page 354 of the same number of the JOURNAL I read an account of some experiments on the effect of diet on the teeth of school children. Glancing at the diets provided, the wonder is, not that the teeth became carious, but that the investigators should spend so much time over what should be a foregone conclusion. No one could reasonably expect a child to be healthy on such fare. What chance have the teeth of any child on such a pap of starch and sugar, and, classified more as a medicine with the cod-liver oil, a quarter of an orange, half a tomato, or two or three drachms of swede juice! It is also stated that the action of ultra-violet light, together with the different diets, is being investigated—why? The teeth were provided for chewing our food, and the action of an apple a day to keep the doctor away is of far more importance than the action of ultra-violet rays—to them.

Such investigations lead to nothing but expense. They start at the wrong end of the subject. Dr. Eric Pritchard, in his *Physiological Feeding of Children* (p. 22), emphasizes the importance of fruit in the diet to supply the mineral deficiencies, and any budding dietitian can see that a diet such as any of the three quoted is simply asking for trouble.

For some years, both in England and on the Continent, I have been interested in child welfare work, and have tried especially to teach the mothers the benefit of uncooked food on the digestion and teeth. If they remember nothing else they should remember that "God sent the food but the devil sent the cook." Many have a rooted objection to giving children raw fruit, on the plea that it is indigestible and too acid. It is neither if it is ripe and is chewed properly. The act of chewing slightly acid fruit stimulates the flow of saliva and cleanses the teeth and gums.

It is long since the days of Hogarth, but one has only to see his caricatures to realize that gluttony was then at its height. Were they all caricatures, those pimply, ponderous, putrefying people? We eat less in these days, but what we lack in quantity we make up for in "quality." Our food has become more "scientific." When the simpler forms of starch, sugar, and meat disagree with us we call in the analytical chemist and have them predigested and concentrated, or mixed with a suitable aperient to pass them along. Such food is practically dead to vitamins but an excellent medium for bacteria, and in the intervals of a "cure" we go about like perambulating culture tubes, prodding our windy stomachs. Small wonder that intestinal stasis, with its grisly train, soon comes upon the scene, and that from slimy mouth to protruding piles we are gassy sewers.

Having arrived at this state, what do we do? Not content, we stir it up with an aperient and start all over again, perhaps with a little bismuth to cover our outraged linings, usually with milk—a fluid teeming with its own bacteria, a good constipator, and an excellent culture medium.

Raw fruits, and especially lemon juice, are the only efficient and *harmless* intestinal antiseptics and natural aperients.

On page 376 (JOURNAL, August 30th) Sir Arbuthnot Lane is reported to have read a paper on the causation of cancer, in which he urged that cancer was the result of chronic poisoning of the tissues of the body, in the vast majority of cases by the poisons absorbed from the gastro-intestinal tract.

One need not be a strict fruitarian, but to the patient with fetid breath, slimy teeth, a large windy belly, epigastric tenderness and pain, and chronic constipation, part of my advice is to drink before meals, avoid cooked food as far as possible, eat fruit in increasing quantities until their motions are practically odourless and their bowels act easily at least once a day. The symptoms generally disappear in a few days. Indigestion is due not to the digestive organs but to indigestible food, and the various morbid conditions—constipation, dilatations, kinks, inflammations, and ulcerations—are the natural sequelae of the continued use of such foods.

The usual advice to take plenty of fresh air and exercise and to eat suitable food is not applicable to hospital patients who are confined to the wards and have to put up with the usual hospital diet supplemented by a dose of aperient *omne mane*. That this diet is a constant source of complaints by returned patients is what every general practitioner knows.—I am, etc.,

Stony Stratford, Bucks, Aug. 27th. A. H. HABGOOD.

X-RAY INTERPRETATION.

SIR,—Many years ago I remember listening to an enlightening and impressive lecture by the late Professor John Chiene of Edinburgh, entitled "Don't Touch." It was a plea for arriving at a diagnosis by means of the eye, a careful weighing of the symptoms, and by the use of scientific methods which involved no unnecessary manipulations of the patient. He described "crepitus" as the forlorn hope of the surgeon. About this time there were many surgeons who forbade the students to attend demonstrations in the *x*-ray department, pointing out that should they rely upon a diagnosis being made by this method they would develop into mechanicians and would fail to secure that confidence in themselves which was a necessity to their advancement and the well-being of their patients.

I have been led to approach you on this subject by a statement made in a letter published in your issue of August 30th, which reads as follows: "Personally I am very happy to be quite sure of a simple fracture." Such a statement is, of course, very assuring to the general public, so far as the writer is concerned, but that this cannot be applied even to some of our leading surgeons it is now my intention to prove.

During the last month I have seen two patients (women), both under 50 years of age, who are suffering from ununited fracture of the neck of the femur, not recognized; hence these two poor women are doomed to the greatest possible amount of inconvenience and perpetual pain for the remainder of their lives.

CASE I.

Five years back Mrs. M. was walking upon a pavement more or less slippery from a recent fall of rain. She slipped, fell upon her right hip, and was unable to rise. She was lifted into a taxi-cab and sent home, where she was put to bed. Her ordinary medical practitioner was called in, and after an examination gave it as his opinion that she was suffering only from a bruised hip, ordered her to keep her bed, telling her that she would be all right. The pain was so severe during the night that she never closed her eyes, and as this did not abate during the following day the senior surgeon of one of our large hospitals was called in. He made a careful examination, told the husband that the pain was due to some of the tissues having been torn, and that she would be all right after a rest in bed. No attempt was made to fix the limb, neither was the patient told not to move it; as a consequence she moved it from time to time (as she did not want it to become stiff), despite the pain which ensued. The limb became swollen and the pain increased to such an extent that the surgeon was again called in. This time, in the night, he administered or ordered a hypodermic injection, telling the patient that the pain would go, and that in a few days she would be able to get up. The pain did not go although its severity diminished. For five years she has been a complete invalid, always in pain, and only able to waddle about with the greatest difficulty. A radiograph showed an ununited fracture, with shortening, and a large amount of callus.

CASE II.

Mrs. N. two years back slipped in the street, and being unable to rise was sent in an ambulance to the nearest hospital. After being examined by several doctors she was told that she would be all right after a few days' rest, and that there was nothing serious the matter with her; she was sent home in an ambulance and put to bed. Her panel doctor confirmed the hospital diagnosis. No splints were applied; she was told it was better for her to move her leg. After seven months in bed she hobbled again to the hospital, was given some medicine, and told to rest as much as she could. Later she visited another hospital, was carefully examined, ordered more medicine, and told to have her teeth taken out. Present condition: ambles along with great difficulty and is never free from pain. A radiograph shows ununited fracture of the neck of the femur, with a large amount of callus and some shortening.

Notwithstanding the fact that twenty-eight years have elapsed since the discovery of the *x* rays, that it is an established fact that many fractures can only be diagnosed by their aid, and that in all fractures the necessary treatment can be better applied from the knowledge obtained through them, here are two cases in which neglect to use the most scientific means of diagnosis has resulted in the permanent disablement and condemnation to perpetual pain of two women in the prime of life, who should, had proper and scientific methods been applied, have been cured.

A fracture of the neck of the femur can be diagnosed by means of the *x* rays with absolute certainty. This being the case, may I ask what excuse can be offered why they were not used in these two cases? I have met with many cases where surgeons, holding positions which entitle the patients who employ them to consider that they are obtaining the best possible advice, have neglected to avail themselves of the benefits which accrue from the use of the *x* rays, and on occasion have even gone so far as to tell the patients that such a measure was useless, whilst there was at least a chance that useful knowledge might have been obtained from them. Surely it is time that the jealousy engendered in the early days of the *x* rays should be washed out in the interest of the public.—I am, etc.,

Birmingham, Aug. 31st. JOHN HALL-EDWARDS.

SIR,—The kindly criticism of Sir Thomas Horder (BRITISH MEDICAL JOURNAL, August 23rd, p. 344) seems to evade the issue; he reasserts that some radiologists give diagnoses which are not justified by the *x*-ray data. I agree; but when he illustrates this bad habit of radiologists by quoting one of my reports I demur, for I have always taken pains to control my *x*-ray observations by the clinical, surgical, and pathological findings.

Dr. Geoffrey Fildes (August 30th, p. 389) expresses the opinion that a radiologist should give no diagnoses, but merely report his *x*-ray observations. If this is his practice I cannot agree with it. Complaint is frequently made by doctors that radiologists issue reports which are too vague to be helpful. In my view the radiologist should (1) describe his observations accurately, and (2) give his conclusions definitely. If his facts do not lead him to a diagnosis, or do not enable him to decide between two (or more) diagnoses, he should say so definitely.—I am, etc.,

London, W., Sept. 1st. ALFRED C. JORDAN.

THE PREVENTION OF MENTAL DEFICIENCY.

SIR,—The papers and discussion on this subject in the Section of Diseases of Children, as reported in the JOURNAL (August 23rd, pp. 316-322), although very interesting in details, do not seem helpful as to main conclusions. While the experts expound theories, no doubt very necessary, are we to wait and say that nothing can be done, or is there some path along which we can all advance? I believe to-day there is a great need for an authoritative pronouncement by the profession as a whole upon the methods which society should adopt to prevent mental deficiency, and that such a pronouncement would have an immediate response from all authorities concerned in social well-being.

I also believe that a very general agreement could be reached upon some points. Take one instance—the thorough application of the Mental Deficiency Act. Probably every practitioner has known cases in which mentally deficient adolescents have been to some extent treated under this Act and then let loose, to some extent improved, but not really fit to take the responsibility of facing the world by themselves, and the result is sometimes more disastrous than if they had never been treated at all. The reason for this seems to be, not that any individual has failed in his duty, but that the point of view of the administration of the Act is not always correct. The State has a duty to maintain the quality of its members at as high a level as possible, and this must be done at all costs, though with the utmost care for individuals.

There are other urgent matters upon which we need light, such as whether there is a permanent pauper class in our midst, and what relation has it to mental deficiency? What attitude can we adopt and what advice are we to give to people on the subject of birth control? What is the relation of venereal disease to mental deficiency? These and kindred questions are all of the greatest importance to our country at the present time and are points upon which practitioners could throw an immense amount of light.—I am, etc.,

Letchworth, Aug. 24th. NORMAN MACFADYEN.

DIET AND DENTAL CARIES.

SIR,—The valuable experiments on the effect of diet on caries, recorded in your issue of August 30th, seem to me to deserve considerable attention. The fact that a diet containing a small amount of easily fermented carbohydrate liable to lodge about the teeth gives rise to a correspondingly small average number of teeth per child in which caries has spread is well shown, while where much easily

fermented carbohydrate liable to lodge is in the diet, the average number of teeth in which caries has spread is great, and where the carbohydrate is intermediate in amount, so, too, is the amount of caries. This is, of course, exactly what is to be expected if the now well established theory of the cause of caries is correct. It is, however, surely regrettable that this simple truth should be obscured by repeated references to calcifying vitamins. Dilating on these is only misleading with regard to the experimental evidence brought forward, because, of course, the teeth affected by the different diets referred to were calcified years before the experiments were commenced.

With regard to post-eruptive hardening of the enamel by the saliva, this is a physical process, and does not require us to assume the presence of calcifying vitamins. Moreover, the saliva does not have the chance of exerting such beneficent action when carbohydrates lodge and ferment under conditions favouring the concentration of acid. The more carefully we consider the subject, the more difficult it becomes to see how calcifying vitamins can be introduced or "mobilized" through this fermenting material, even with the aid of ultra-violet rays.—I am, etc.,

London, W., Sept. 6th. J. SIM WALLACE.

PLANNING A DOCTOR'S HOUSE.

SIR,—I have just gone into a new house, built under my own and the architect's suggestions for medical practice. When beginning, I wished that I could have had access to one or more plans from my own point of view. I write to say that, if it may help any doctor who contemplates building, the architect will be willing to submit a copy of the plan.

The house has on the ground floor waiting room, dispensary and consulting room, dining and drawing rooms; upstairs four bedrooms, bathroom, w.c., linen cupboard with cylinder, and a small dressing room; small lavatory inside the front door; kitchen, larder, pantry, with scullery and coalhouse inside the back door. The false roof would have taken two large bedrooms if I had wanted them.

The house is built on one acre of land, two and a half miles from Scarborough.—I am, etc.,

Newby, near Scarborough, Sept. 1st. J. P. WIGHTMAN.

POOR LAW PATIENTS AND FREE CHOICE OF DOCTOR.

SIR,—From the letters in the BRITISH MEDICAL JOURNAL of August 30th by Dr. M. W. Renton (p. 389) and Dr. T. Murray (p. 392) it would appear that both a slur is to be cast and an attack made on the holders of Poor Law medical appointments. Speaking as a district medical officer who has held his appointment for many years, I have never once had a complaint lodged by any patient. To a country practitioner such as myself, inadequate as the salary may be, it is none the less an important part of my income. In fact, there are country practices where a living could not be made without these appointments. What may be possible in such populated districts as Dartford, where men can obtain a much larger number of insured patients to make up for any deficiency of income, cannot or should not be applied to less populated districts. Is it proposed to indemnify the present holders of district medical officers' appointments for their loss?—I am, etc.,

August 30th. NESTOR.

IRREDUCIBLE HERNIA IN INFANTS.

SIR,—In connexion with the recent correspondence on this subject it is interesting to recall the statement of Mr. John Fraser in this JOURNAL (1922, i, p. 177):

"I have looked over the records of 3,000 cases of inguinal hernia which have been under treatment in the Edinburgh Children's Hospital, and among such a large number there has been no instance of strangulation as we find it in the adult. Many of the cases have been irreducible, but even in those which have been irreducible for several days strangulation had not resulted."

Recently in the Bradford Royal Infirmary, in a series of fifteen consecutive emergency cases of strangulated or irreducible inguinal hernia, three were in young children. Their ages were 4, 11, and 18 months, and they were thus considerably older than the cases recently commented upon. In all the cases irritability and crying were the first signs. Vomiting was a late sign. In two cases an attempt at reduction by taxis under general anaesthesia had failed. All the cases were operated on within twenty-four hours of the onset of the acute conditions and were discharged home healed within twelve days. It was noted in all that the small bowel in the sac was not unduly congested.

I suggest, therefore, that in young children irreducible inguinal hernia should not be looked upon as a rarity. Although realizing that there is not the same degree of constriction as in adults, it seems advisable that reduction by taxis under anaesthesia should not be attempted, but that the practitioner should arrange for immediate operation to be undertaken.—I am, etc.,

DAVID L. MCRAE TOD,
Resident Surgical Officer, Bradford Royal Infirmary.

August 23rd.

CHRONIC ULCERATIVE COLITIS.

SIR,—Your interesting article upon the etiology of ulcerative colitis (August 30th, p. 378) makes reference to its well known intractability. This reference prompts me to offer the suggestion, based on my own experience, that the complaint would prove less intractable, and less liable to result in extensive ulceration, if the value of Dr. Wedgwood's mercury and iron mixture (see BRITISH MEDICAL JOURNAL, February 16th, 1924) were more generally recognized.

I have before me a letter dated August 27th, 1924, from Dr. Chillingworth of Bedford, which illustrates this point. He writes to tell me of the complete success of this mixture in a severe case under his care which had been in the Samaritan Hospital, London, then in Charing Cross Hospital, where it was diagnosed as tuberculous ulceration, and "sent home by ambulance to die," but who on mercury and iron "at once improved and is now quite well."—I am, etc.,

T. STACEY WILSON,
Consulting Physician, Birmingham General Hospital.

September 4th.

*** Dr. Wedgwood's original note was published in the BRITISH MEDICAL JOURNAL in 1894, vol. i (p. 1126). Dr. Wedgwood there stated that he had been led to use the treatment in typhoid fever on the theoretical ground that the indications might be met and the disease combated by the "internal administration of some astringent preparation of iron combined with small and continued doses of perchloride of mercury. During the past two years I have treated twenty-one consecutive cases by giving mxx doses of tinctura ferri perchloridi with liquor hydrargyri perchloridi 3ss every four hours."

COCAINE SUBSTITUTES.

SIR,—I am, of course, aware that criticism is a form of flattery. Nevertheless I have no intention of replying again to the letter of Mr. E. Watson-Williams (August 16th, p. 298) because those who are interested in the matters at issue will appreciate that all the points he has again raised have been fully dealt with in my paper (BRITISH MEDICAL JOURNAL, July 12th, 1924) or in my letter in your issue of August 2nd.

Mr. E. Watson-Williams has added one original observation of his own to the discussion, and this should naturally be the most valuable part of his contribution. In his letter of August 2nd Mr. E. Watson-Williams says: "I have been using tutocain in my practice for three months, but cannot find any appreciable 'shrinkage'—certainly nothing at all comparable to that produced by cocaine." Other observers, whose names I have given, who have had more experience of tutocain than Mr. E. Watson-Williams, say: "The shrinkage is quite definite, though less than that given by cocaine"; and again: "The mucous membrane and erectile tissue of the nose shrinks and pales very quickly."—I am, etc.,

Pharmacological Laboratory, Cambridge, Sept. 8th. A. J. COPELAND.

*** We cannot continue this correspondence.

TUBERCULOSIS IMMUNITY.

SIR,—Will you permit me to correct an error on the part of Dr. Eric Pritchard as reported in the BRITISH MEDICAL JOURNAL of August 30th (p. 368) in the discussion on tuberculosis in children? Dr. Pritchard is reported to say:

"Dr. Nathan Raw had also recently made use of attenuated cultures of the living bacillus."

My immunizing vaccine is prepared from attenuated cultures of *dead* bacilli, and I have never used living bacilli for this purpose. My results with this vaccine have been so satisfactory that I have never used the other.—I am, etc.,

Loughton, Essex, Sept. 3rd. NATHAN RAW.

TREATMENT OF PUERPERAL SEPSIS.

SIR,—We note with surprise that in an article by Dr. Canney on the treatment of puerperal sepsis, in your issue of August 30th (p. 356), he advocates the use of active exploration of the uterus in all cases as follows:

"In a case showing signs of intrauterine sepsis I do not think it matters how complete the placenta, etc., may have been on inspection or to the usual tests, because no one can tell whether minute pieces may not remain. Every effort should be made to remove, with the greatest care and with all possible gentleness, any detritus, however small."

We feel most emphatically that such a dangerous procedure can not only do no good but is liable to do an infinity of harm by converting a local uterine infection into a general septicaemia.

The great majority of all cases of pyrexia in the puerperium resolve entirely without any treatment beyond the simplest medical measures, while the experience of all of us includes examples of the serious harm caused by unnecessary exploration of the uterus by the finger or curette.

In support of our contention we submit the experience of Queen Charlotte's Hospital, illustrated by the following figures: Of 3,147 consecutive cases of puerperal temperature above 100°, 2,805 cases (89.2 per cent.) subsided within four days.

This experience affords very strong evidence that in general it is safer to adopt an expectant attitude and to leave alone the interior of the uterus. We believe that it is fundamentally unsound to interfere with Nature's defensive mechanism, particularly as the invading organisms have already penetrated into the uterine wall beyond the reach of the blunt curette. In addition, the trauma of the uterine wall serves to disseminate the infection by opening new areas, as shown clinically by the frequent sequence of rigors.—We are, etc.,

C. HUBERT ROBERTS.
J. BRIGHT BANISTER.
ALECK W. BOURNE.
TREVOR B. DAVIES.
LOUIS CARNAC RIVETT.
LEONARD PHILLIPS.
C. S. LANE-ROBERTS.

Queen Charlotte's Hospital, London, Sept. 9th.

The Services.

THE HEALTH OF THE ARMY.

THE Report of the Director-General Army Medical Services for the year 1921 has just been received, and is the first of its kind published since the first half of 1914.*

Sir William Leishman, in his opening sentence, remarks that the physical standard of the army during the year under review was very much lower than that prior to the war. He attributes this decline to the effects of the war on the health of those officers and men who continued to serve after the armistice, and in greater degree to the relatively poor quality of the recruits accepted to fill the places of the men demobilized. In so far as comparison has been possible with the preceding year, it appears that a considerable improvement was taking place during 1921, and that a return to the high standard of 1913 was to be expected at no distant date.

A statistical report of sickness incidence shows that West Africa had the highest ratio of admissions to hospital, and was followed by India and Iraq. Apart from North China, where the military strength was so small as to render the ratio of little value, the death rate was highest in Iraq, 10.74 per 1,000, and in India, 7.09. Malaria was responsible for the highest number of admissions, 23,893, no fewer than 18,878 of these occurring in India.

In the section devoted to the medical examination of recruits, the Director-General contrasts the ratio of rejections on medical examination in 1920-21 (354.01 per 1,000) with that in 1912-13 (202.50). He ascribes this large increase to the poorer physique of those presenting themselves for enlistment, and also to the fact that a large proportion of the recruits had served during the war and presented minor disabilities which, though insufficient to bar them from service in a national emergency, were grounds for rejection in the case of a voluntary army on a peace footing.

The reorganization of the hygiene service of the army, planned since 1914, has been devised to link under a directorate of hygiene at the War Office the medical officers with special hygiene duties, to initiate and stimulate research into hygiene problems, thus improving the standard of army hygiene, and by the employment of specialist officers to ensure the prevention of wastage due to disease and physical inefficiency. The directorate of hygiene supervises and administers the Army School of Hygiene, maintains close relations with the Hygiene Department of the Royal Army Medical College, and superintends and directs hygiene research. Through the assistant directors of hygiene of commands it is kept intimately in touch with hygiene matters in the army, and is in liaison with the civil public health departments. All officers R.A.M.C. receive instruction in hygiene at the College on entering the service, and again about eight years later, when attending the senior officers' course. In war the following units are organized and allotted to armies in the field: sanitary sections to supervise technical hygienic measures, mobile hygiene laboratories for special investigations, and trained personnel for mechanical transport water-tank companies. The formation of non-medical "cleansing units" is under consideration.

A marked reduction in the incidence of syphilis occurred in 1921 as compared with 1913; this is attributed to measures of education, prophylaxis, both recreational and medical, notification, and treatment. A new directorate of pathology was established in June, 1919, and combines under a definite organization the various departments and individuals concerned, and the training of experts in all branches. Officers are encouraged to specialize, and facilities are afforded for research work. An advisory committee, including both civil and military experts, meets monthly to deal with problems and make recommendations. It is calculated that £20,500 was saved during the year by the pathological department of the Royal Army Medical College in connexion with the manufacture and supply of vaccines and serums.

In 1921 the dental treatment in the army was put on a permanent basis by the establishment of the Army Dental Corps. The preservation of natural teeth is aimed at and the avoidance of the need for artificial substitutes. Of the men inspected during the year in all commands 81.47 per cent. required dental treatment, and of these 81 per cent. received it. Lectures on oral hygiene resulted in a marked improvement in the state of the mouths of newly joined recruits who had previously been unaccustomed to daily cleansing of the teeth.

* Report on the Health of the Army for the year 1921. Vol. LVII. London: H.M. Stationery Office, or to be purchased through any bookseller. 1924. 3s. net.

DEATHS IN THE SERVICES.

Surgeon General Alexander Dudgeon Gulland, Army Medical Staff (ret.), died at Cheltenham on September 4th, aged 91. He was born at Falkland, Fife, and educated at Edinburgh, where he graduated as M.D. in 1857, having previously taken the L.R.C.S. in 1854. He entered the army as assistant surgeon on June 23rd, 1854, more than seventy years ago, attained the rank of deputy surgeon-general on June 14th, 1883, and retired, with a step of honorary rank, on October 1st, 1883. In the old regimental days he served in the 41st Foot, now the Welsh regiment, on the staff, in the Royal Artillery, and in the 6th Foot, the Warwickshire regiment. He was in the Crimea in 1854-56, at the siege of Sevastopol, and the expedition to Kertch, receiving the medal with a clasp, and the Turkish medal; he served also in the second China war in 1860-62, in the actions at Sinho and Tanoku, the capture of the Taku forts, and the Taeping rebellion, and received the medal with clasp; he was on the North-West Frontier of India, in the Hazara campaign of 1868, and received the medal with clasp. General Gulland's death leaves only one medical survivor of the Crimea still living—Surgeon Major A. E. T. Longhurst.

Lieut.-Colonel John Murray, J.P., R.A.M.C. (ret.), died at Aberdeen on September 2nd, aged 81. He was born and educated at Aberdeen, where he graduated M.B. in 1864 and M.D. in 1884. He entered the army as assistant surgeon in 1864, and retired with the honorary rank of brigade surgeon in December, 1884. He served in the 93rd Foot, the Argyll and Sutherland Highlanders, in the 80th Foot, the South Staffordshire regiment, and on the staff, under the regimental system.

Surgeon William Sharpe, M.D., R.A.M.C. (ret.), died at Bundoran on June 25th, aged 82. He was educated in the Queen's University, Ireland, where he graduated M.D. in 1866 and C.M. in 1868, and entered the army as assistant surgeon on October 1st, 1868; he was placed on half-pay, on account of ill health, just ten years later. He was the author of several volumes of poetry and on religious subjects: *Humanity and the Man*, London, 1878; *Humanity and the Serpent of Genesis*, Boston, 1886; *Man, a Special Creation, or the Preordained Evolution of Species*, London, 1873; *Alcohol, a Factor in Human Progress*, London, 1882; *The Cause of Colour among Races, and the Evolution of Beauty*, London, 1879; *The Conqueror's Dream, and other Poems*, London, 1878 (third edition, 1881).

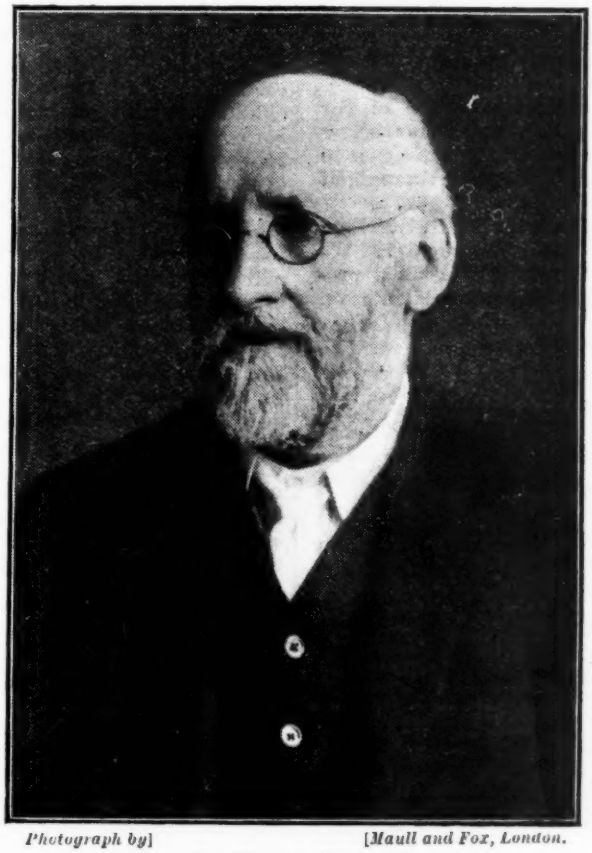
Obituary.

SIR WILLIAM BAYLISS, F.R.S.,

Professor of General Physiology, University College, London.

THE death, on August 27th, of Sir William Bayliss, at the comparatively early age of 64, which we had the sorrow to announce in our issue of August 30th, has robbed English medical science of a leading physiologist and a great philosopher, and has taken from the scientific world a man whose profound knowledge and kindly nature had won for him universal respect and affection.

William Maddock Bayliss was born in 1860 at Wolverhampton. He was the only son of Moses Bayliss, iron manufacturer, and, being a weakly child, he was educated privately. In 1881 he entered University College as a medical student. There he worked, first under Burdon Sanderson, and later under Schafer. He followed Burdon Sanderson to Oxford in 1888, and entered at Wadham College. While in Oxford he abandoned medicine and devoted himself to the study of pure physiology. Hence he never took a medical degree, although for the greater part of his life he worked on problems of the greatest importance for medicine. He returned to London and commenced physiological research at University College under Professor Schafer. For the rest of his life he remained attached to University College, where he devoted the greater portion of his time to research, but where he also held a succession of teaching appointments and did a considerable amount of teaching. He finally became Professor of General Physiology at University College, an appointment that he held until his death.



Photograph by] [Maull and Fox, London.

SIR WILLIAM BAYLISS.

In 1890 he commenced his scientific partnership with Professor E. H. Starling, and during the ensuing fifteen years that partnership produced a series of researches of fundamental importance. The best known of these was the discovery of "secretin," the hormone produced in the duodenal mucosa, which excites the pancreas to activity. This discovery was of particular importance because it revealed a new mode by which the organs of the body could be controlled—namely, by the transmission in the blood stream of hormones, substances which are produced in one organ and carried by the blood stream to other organs on which their effect is manifested. The clear demonstration of this mechanism really formed a key with which it was possible to make a commencement at solving some of the complex problems of endocrinology. The discovery represents, therefore, one of the most fundamentally important advances in modern physiology.

Many other researches by Bayliss and Starling were of almost equal importance; amongst them may be mentioned the revealing of the laws governing the peristaltic movements of the intestine; at this period Bayliss also published a number of papers dealing with the mode of action of vaso-dilator nerves.

During the last twenty years of his life Sir William Bayliss devoted himself particularly to the application of physico-chemical principles, to physiological problems, and did much of the early work which established the laws governing the action of enzymes, adsorption, etc. He was particularly interested in the laws governing the behaviour of substances in the colloidal state, for he recognized very early the great importance of this subject to physiology; he was one of the chief English pioneers in the development of the new science.

Bayliss worked out experimentally the law governing the state known as Donnan equilibrium; this he did independently of Professor Donnan, who proved them by thermodynamics. This law shows that when a mixture of colloids and salts is enclosed in a membrane impermeable to the former and permeable to the latter, the presence of the colloids causes the concentration of the salt to be different inside and outside of the membrane. Every cell in the living body is an example of such a state, and hence this law has proved to be of great and increasing importance in the study of the physical chemistry of cells.

In 1914 he brought out his great textbook *The Principles of General Physiology*. It was not merely a textbook, but rather a treatise giving the personal outlook of a man of profound learning who had succeeded in mastering the whole of the vast field of knowledge the book covers. It has been called a "textbook for professors," but it has been very widely used by undergraduate students, although perhaps its chief importance has been due to its influence on research students.

Before this work appeared it had been assumed that the days of the great textbooks of physiology had passed, since it was thought that the subject had become so vast that no one mind could master more of it than a small fraction. Bayliss's textbook, however, deals with physiology as a whole, and the more closely his work is studied the greater becomes our respect for the author's depth and breadth of knowledge and clearness of judgement.

During Sir William Bayliss's last illness a group of his friends and disciples, under the leadership of Professor A. V. Hill, undertook the preparation of a new edition of this book as a tribute to the author. Each contributor took a subject on which he had special knowledge, but even so all were surprised at the difficulty in revising even a small portion of the work, and many for the first time fully realized the extraordinary industry, knowledge, and judgement required of the author who had written the entire volume single-handed. It had been hoped to present Sir William Bayliss with the completed work, but unfortunately the book was still in the printer's hands at the time of his death.

During the war Bayliss made researches of the greatest practical value on the causation and treatment of shock. In association with Professor Cannon he demonstrated that wound shock was due to the production by injured tissues of toxic breakdown products, and thus they made clear the lines along which shock might be prevented or minimized. Furthermore, he studied the effects of transfusion, and showed that the reason for the inefficacy of saline transfusions in the treatment of shock was that the saline rapidly left the blood vessels. He concluded that the leakage could be minimized by the addition of a colloid of high viscosity, and for this purpose devised his well known gum-saline mixture, which consists of normal saline with the addition of 6 per cent. gum arabic. This mixture was used with great success in the latter stages of the war in the treatment of shock.

Sir William Bayliss was the recipient of the highest scientific honours. He was elected Fellow of the Royal Society in 1903; in 1911 he was awarded the Royal Medal of the society, and in 1919 received the highest honour the society can bestow, the award of the Copley Medal. He was knighted in 1922. He also received honorary degrees from a number of British universities, and honours from several foreign academies.

Any account of Sir William Bayliss's career would be incomplete without an attempt to give an appreciation of his personality. As has already been mentioned, he possessed the most profound learning, which ranged beyond physiology over biology, physics, and chemistry, and coupled with this was a kindliness of nature which made it a real pleasure to him to help anyone who sought his advice. As a result advice or information was sought from him by everyone in the department, and by many from outside, on the most varied subjects, and he helped everyone, even the most junior and most ignorant, with an equal cheerfulness and kindliness, without any regard to the invasions thus made on his valuable time. This JOURNAL has frequently been indebted to him for advice, which was always most readily given, and from time to time he contributed reviews and articles to our columns.

The above remarks give only a feeble outline of Sir William Bayliss's attractive personality, and a far better indication of this is the universal respect and affection in which he was held by his scientific colleagues throughout the world.

He married in 1893 the sister of Professor E. H. Starling, and is survived by her, three sons and one daughter. We are, we know, expressing the feeling of the medical profession when we offer to Lady Bayliss sincere condolences on her irreparable loss.

T. SYDNEY SHORT, M.D.LOND.,

Senior Physician, Birmingham General Hospital.

WE regret to announce the death, on August 27th at Claverdon, of Dr. T. Sydney Short of Birmingham. The end was sudden and unexpected, Dr. Short having visited the General Hospital, to which he was senior physician, as recently as five days before his death.

Thomas Sydney Short was born in Sheffield in 1860, and was a grandson of the late William Dudley. He took the diplomas of M.R.C.S. and L.S.A. in 1883, and the degrees of M.B.Lond. (1885) and M.D. (1891). In 1886 he obtained the D.P.H.Camb., and won the medal in hygiene at University College, London. He became M.R.C.P.Lond. in 1891. He was a student at King's College, London, and was house-physician to the hospital and assistant demonstrator of anatomical physiology in the medical school. He settled in Birmingham in 1886, and his whole medical life was spent in the city of his adoption. During the war he was attached to the 1st Southern General Hospital with the rank of Major R.A.M.C.(T.F.). He contributed several papers to our columns, and in 1916 he was Ingleby Lecturer to the Birmingham University. In addition to his appointment at the General Hospital, he was consulting physician to the Birmingham General Dispensary.

We are indebted to Dr. A. STANLEY BARNES, physician to the General Hospital, Birmingham, for the following tribute:

By the death of Dr. Sydney Short, the General Hospital loses the services of one who had been associated with it for nearly forty years. He first came to Birmingham as resident medical officer to the Jaffray Hospital in 1886, and in March, 1889, was appointed resident medical officer to the General Hospital in Summer Lane. As a resident he was exceptionally popular with the students, for he was always ready to put himself to any amount of inconvenience to assist them in their clinical work; so much so that the students preferred to go round with the resident rather than their visiting chief. He became assistant physician in 1881 and was promoted to the full staff in 1904; he was senior physician to the hospital at the time of his death.

Dr. Short's main interests in academic medicine were in gastric diseases and the diatheses, but of late years he had not contributed largely to medical literature. As a physician he was the strong man rather than the sympathetic one. He made an excellent medical witness, for once he had formed an opinion nothing could shake him in his belief. As a colleague he was most reliable. His business habits and strict punctuality made him invaluable in committee work. He had for many years been a member of the British Medical Association, and in 1921-2 was President of the Birmingham Branch; his inaugural address on memory will be remembered by many for its pungent wit and caustic criticism. Of recent years his recreations had been chiefly of the indoor type, though he played some golf and much tennis. He was vastly interested in music, dancing, and the drama; and after having been no mean exponent of all three arts, he had more or less settled down to become an acute critic of the performances of others. His death will be greatly regretted by a large circle of friends and acquaintances, and more particularly by his colleagues on the staff of the General Hospital.

ÆNEAS D. M. MACINTYRE, M.B., C.M.EDIN.,

Consett.

BY the death of Dr. Æ. D. M. Macintyre of Consett, co. Durham, on August 16th, the district loses one of its oldest and most respected medical practitioners. He was born at Kincardine, Ross-shire, and was a student at Edinburgh; he took the L.S.A. in 1886 and the M.B., C.M.Edin. in 1888. When a little later he settled at Consett he was a young man, full of restless energy and vigour, burning with an intense enthusiasm for his professional work. He soon gained the confidence and goodwill of the people. He was regarded as a wise and skilful practitioner, and many were the expressions of sorrow heard from his friends and patients when they learnt of his death. At the time Dr. Macintyre settled in Consett the industrial activity of the district was rapidly increasing in connexion with the famous ironworks, but there were many large farmsteads in the surrounding neighbourhood. Consett became the centre of a populous district, and as a consequence Dr. Macintyre soon had his hands full, and his name became a household word. He led a most strenuous life, and possessing, as he did, an alert mind and a wiry body he never spared himself. Though his leisure time was limited, it is really remarkable how well he kept himself acquainted with every new idea and discovery in professional matters. Moreover, everything in the social and municipal life of the district appealed to him. For some years he served on the local council. Afterwards he became medical officer of health, a post for which his knowledge and his sympathies eminently fitted him. He had long been a member of the British Medical Association, and at the time of his death was vice-chairman of the Consett Division. A reformer he certainly was, not of the voluble type, but of quiet and effective speech—a man of action rather than of words, for in manner he was rather reserved. It was his intention in his youth to enter the legal profession, and with this end in view studied in Edinburgh for two sessions, and though he soon abandoned law for medicine his mind had a legal bias, as could easily be detected in discussions at medical and other meetings. The war brought many trials to him, and Dr. Macintyre's breakdown in health may be attributed to his strenuous activities at that period. A short illness overtook him, and although he went back to work he never regained his former vigour; his constitution was broken, but he died in harness. He was a general practitioner any district might be proud to honour. He was a native of the Highlands, and to those familiar with Scottish history the name Æneas Donald Mackay Macintyre embodies in itself the stirring memories of the romance, poetry, and military glory of that region.

W. M. M.

Professor RUTHERFORD MORISON writes: Dr. Macintyre of Consett was one of the best known of the senior practitioners of Durham County, and will be sadly missed. During the past years he has fought with indomitable courage against increasing disability, and often went to relieve the sufferings of others when his own condition was worse than that to which he was attending. His skill,

geniality, and self-sacrifice endeared him to a large community, and his son, who follows in his father's footsteps, has been left a difficult task.

The tragic death of Dr. EUSTACE HENRY LIPSCOMB, at the age of 64, in a boating accident at Tregastel, Brittany, on August 25th, has caused deep sorrow in St. Albans, with the public life of which Dr. Lipscomb had been prominently associated for many years. He was one of a party of five in a boat which capsized, and lost his life in an endeavour to save others. He was the son of Dr. J. T. N. Lipscomb of St. Albans, and was educated at the Grammar School there, at Norwich Grammar School, and at Cambridge and Guy's Hospital; he obtained the diplomas of M.R.C.S., L.R.C.P. in 1886, graduating M.B., B.Ch. in 1889. Until 1921 he was honorary medical officer of the St. Albans and Mid-Hertfordshire Hospital, and subsequently was consulting medical officer. In 1893 he succeeded his father as medical officer to St. Albans prison, which was taken over in 1915 by the military authorities as a detention barracks; he retained his connexion with it until it was vacated in 1919. His other medical appointments included those of certifying factory surgeon, physician to the Duchess of Marlborough's Charity, and clinical assistant to the East London Hospital for Children and Dispensary for Women. He had held the office of president of the South Midland Branch of the British Medical Association. For many years he had been a member of the city council, and in 1909 he was elected mayor of St. Albans, an office which had been previously held by both his father and grandfather. He was a prominent Freemason, a P.G. Deacon of the Province of Hertfordshire, and a P.P. Sojourner of the Province of Herts in Royal Arch Masonry. In 1912 he married Miss M. C. Millman, who at that time was matron of the St. Albans and Mid-Hertfordshire Hospital, and who, with one son, aged 10, survives him.

We regret to record the death of the widow of the distinguished physician, Dr. J. S. Bristowe, F.R.S., of St. Thomas's Hospital. Mrs. Bristowe's kindness of heart, great charm of manner, and considerable fund of humour had gained for her a large circle of friends, who will ever treasure her memory. She possessed also artistic taste, and as an amateur pursued to the last her painting in water-colours, which ranked high in merit. Dr. Bristowe, who died in 1895, was one of the most eminent and learned physicians of his day, and his best known work, *The Theory and Practice of Medicine*, was one of the leading textbooks in this country and abroad.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

COMMISSIONERS' SCHEME.

THE University Commissioners appointed in accordance with the recommendations of the Royal Commission regarding the organization of teaching in the University of Cambridge have, after considering the representations made to them, sent a memorandum to the Vice-Chancellor embodying a scheme. The document is divided into two parts, the first dealing with the temporary steps which will be taken to introduce the faculty system, and the second setting out the permanent organization proposed. We will deal with the latter first.

PERMANENT SCHEME.

Faculties.

Under the scheme, which it is proposed to bring into force on October 1st, 1926, there would be faculties, faculty boards, and a general board of studies. All fees for lectures announced by the general board of studies would be paid to the University.

There would be eighteen faculties, arranged in two groups—Arts and Science. In the Arts group there would be eleven faculties and in the Science group seven. In the latter, however, the faculty of Biological Studies would be divided into two departments, the one containing four sections and the other six. The departments in the second section of the faculty of Biological Studies would be biochemistry, experimental psychology, human anatomy, parasitology, pathology, and physiology. The faculties would be composed of professors, readers, university lecturers, fellows of colleges giving lectures or demonstrations, and a certain proportion of other persons appointed by the Board of the faculty.

Medicine would be one of the faculties in the Science group. It would consist of teachers who come within one of the classes above mentioned, and give instruction in medicine, surgery, pharmacology, anatomy, biochemistry, physiology, or pathology, or give courses in physics, chemistry, or biology for medical students.

The Faculty Boards would consist of the professors, a certain number of members of the faculty elected by it for a period of four years, a certain number of persons nominated by the council of the senate for a period of two years, a certain number nominated by the Board, and in certain cases representatives of cognate studies.

The Faculty Board of Medicine would consist of the Regius Professor of physic, the Downing professor of medicine, the professors of anatomy, biochemistry, pathology, and physiology, four members of the faculty elected by it, and two persons nominated by the council.

General Board of Studies.

The suggestion of the commissioners is that the general board of studies should consist of the vice-chancellor, of four members each of the groups of arts and science faculties respectively, four members of the council of the senate, and two persons not members of the council of the senate elected by the University for four years. It is proposed to transfer the present duties of the General Board in regard to the awarding of the higher degrees to the Board of Research Studies.

University Lectureships.

The commissioners suggest certain regulations for university lectureships (including demonstratorships). Lecturers would be appointed by a standing committee separately constituted for the faculty or department. This committee would consist of the vice-chancellor, the head of the department, three members of the board of the faculty, and two persons nominated by the General Board.

Tenure.—Appointments would as a rule be made in the first place for three years, but on reappointment tenure would be for so long as the lecturer continued satisfactorily to perform the duties of his office until the retiring age. The Faculty Board is to ensure that professors, readers, and lecturers continue to perform the duties of their office satisfactorily.

Work and Salaries.—The passage from the report under this head is as follows:

> The Commissioners think it will be impossible to ensure absolute equality between the conditions of work and remuneration in the various faculties. Their present opinion is that there should be a basic amount of teaching work obligatory upon a University Lecturer—namely, not fewer than thirty-two or more than forty-eight hours of lecturing during the year. That the initial basic salary given in respect of such amount of work be not less than £160. That the General Board should have authority to vary in specific cases the requirements as to the basic amount of teaching work. That each Faculty should have a scale of increments in the basic salary to be approved by the General Board, and that other payments in addition to the basic salary should be made in consideration of work done in addition to the basic amount of work. That Boards of Faculties should have power to make a maximum additional payment of £250 a year to a University Lecturer who is not a Fellow of a College. That the payments to be made to University Lecturers in addition to the basic salary should be determined by the Faculty Board concerned and made from Faculty or Departmental Funds. These funds will consist of (1) fees for lectures, including lectures given by professors and readers, (2) contributions from the chest.

Retiring Age.—The commissioners recommend that the retiring age for all members of the university teaching and administrative staffs shall be 65, but contemplate that the General Board would have power to continue a professor in office for a period not exceeding five years—that is, until he attains the age of 70.

Position of Women in Relation to Teaching.

The commissioners contemplate that the statutes will be so framed as to render women eligible for professorships, readerships, university lectureships, and examinerships, subject to the reservations made by the Royal Commission. Fellows of women's colleges will be eligible to become members of faculties.

TRANSITIONAL ARRANGEMENTS.

The University will have to decide at the outset which of the existing lecturers of varying seniority in each faculty it is prepared to take on the permanent university establishment, and will have to make a separate bargain with each such lecturer. It is proposed, therefore, that the University should, before July 1st, 1926, make appointments to university lectureships in each faculty, to take effect on October 1st, 1926. The council of the senate would nominate an appointing committee for each faculty, which would make its recommendations at the

end of Lent term, 1926, as to the initial number of university lectureships in each faculty, the persons to be appointed, and the terms of appointment.

THE NEW INSTITUTE OF PATHOLOGY.

We announced on January 26th (p. 163) the acceptance by the Senate of the University of Cambridge of the offer of the Board of Trustees of the Rockefeller Foundation to endow the School of Pathology in the University. The trustees offered £100,000 for the building of a pathological institute and its general maintenance, and to contribute £33,000 towards its endowment, the University undertaking to find an equal amount for the completion of the endowment. In response to an appeal by the University authorities, Mr. Ernest Gates, of Old Buckenham, Norfolk, has now promised to give this sum in memory of his wife. Mr. Gates is managing director of Salts (Saltaire), Ltd., and a director of other Bradford wool manufacturing firms.

UNIVERSITY OF LONDON.

Parliamentary Election.

THERE is a vacancy in the parliamentary representation of the University; there are three candidates—Sir John Rose Bradford, nominated by the Unionist Association, Professor A. F. Pollard by the Liberal Association, and Dr. E. Graham Little by the Graduates' Association as a non-political candidate. The date of the election has not yet been fixed. The total number of graduates does not seem to be stated in the *Calendar*, but at a rough estimate it is between 13,000 and 14,000. At the general election in 1922 the total poll was 7,440, and the late Sir Sydney Russell-Wells was returned with a majority of 1,663. At the general election in 1923 the total poll was 8,050, the figures being: Sir Sydney Russell-Wells (Conservative) 4,037, Professor A. F. Pollard (Liberal) 2,593, Mr. H. G. Wells (Labour-Socialist) 1,420.

Every graduate who complies with the conditions prescribed in the Representation of the People Act, 1918, is entitled to be registered as a parliamentary elector on making a claim and paying a fee of £1, which also covers life membership of convocation. No further fee is required from graduates who are already life members of convocation.

A Departmental Committee.

The President of the Board of Education, on August 29th, announced that the reference to the Departmental Committee on the University of London which he has decided to appoint is as follows:

"To consider the Final Report of the Royal Commission on University Education in London dated March 27th, 1913, and, having regard to present circumstances and after consultation with the persons and bodies concerned, to indicate what are the principal changes now most needed in the existing constitution of the University of London, and on what basis a statutory commission should be set up to frame new statutes for the University."

The constitution of the Committee was not complete.

Medical News.

THE Melbourne Permanent Committee for Post-Graduate Work offers a prize of 150 guineas for the best essay on the causes and prevention of maternal morbidity and mortality. The essay should include discussion of the following problems: the teaching of obstetrics to students, graduates, and nurses; hospital conditions, control, and staffing; the conduct of private obstetric practice; and ante-natal supervision. Throughout the essay attention should be chiefly given to the prevention of maternal morbidity. This competition is open to members of the British Medical Association registered in the Commonwealth of Australia. The essays should be typewritten, and must be delivered to the honorary secretaries of the Post-Graduate Committee at 12, Collins Street, Melbourne, on or before May 1st, 1925. The prize essay will become the property of the committee, and provided that the committee so approves, it will bear the expense of publication. Each essay must have a motto or device placed upon it, and be accompanied by a sealed envelope with the name and address of the author inside, but having on the outside the same motto or device.

PROFESSOR PAVLOV'S seventy-fifth birthday is to be celebrated at Leningrad on September 27th by the publication of a "Festschrift" in the form of a special number of the *Archiv biologitscheskich Nauck* (Archives of Biological Sciences), which is the official organ of the Institute of Experimental Medicine.

THE Lord Mayor of Liverpool on September 4th unveiled at Leasowe Hospital for Crippled Children a tablet to the memory of Mr. G. P. Newbolt, F.R.C.S., first chairman of the hospital. It will be remembered that a committee has been formed to establish a memorial to Mr. Newbolt at the Royal Southern Hospital, Liverpool, to which he was surgeon down to the time of his death. Donations may be sent to the treasurer of the Newbolt Fund, Mr. Lyon H. Maxwell, at the hospital.

AT the invitation of the Hong-Kong and China Branch of the British Medical Association a joint conference with the China Medical Missionary Association will be held at Hong-Kong on January 21st, 1925, and following days. Further particulars will be published shortly.

THE annual dinner of past and present students of St. Mary's Hospital Medical School will take place at the Connaught Rooms, Great Queen Street, W.C., on Monday, October 6th, when Dr. E. M. Callender, C.B.E., will take the chair at 7.30 p.m. The honorary secretary is Dr. Hope Gosse.

THE prizes to students at Charing Cross Hospital Medical School will be distributed on Wednesday, October 1st, at 3.30 p.m., by Sir Humphry Rolleston, Bt., President of the Royal College of Physicians of London. The annual dinner of past and present students will be held on the evening of the same day at Gatti's Restaurant, when the chair will be taken at 7.30 by Mr. Charles Gibbs, senior surgeon to the hospital. The charge will be 12s. 6d., which can be paid at the door or sent in advance to the Dean, Dr. W. J. Fenton.

A NEW course of post-graduate study will commence at the National Hospital for the Paralysed and Epileptic, Queen Square, Bloomsbury, W.C.1, on October 1st and continue till November 23th. The course will consist of out-patient clinics, clinical lectures and demonstrations, and lectures on the pathology of the nervous system. A course of lectures on the anatomy and physiology of the nervous system and of clinical demonstrations on methods of examination will also be given if a sufficient number of applications is received. Further particulars can be obtained from the dean of the medical school at the hospital.

THE Westminster Hospital is giving a two weeks' intensive course from Monday, September 22nd, to Friday, October 3rd, daily, from 10.30 a.m. to 5.30 p.m., including clinical demonstrations, lectures, pathology, orthopaedics, and operations. The first lecture will be given by Mr. Walter Spencer at 10.30 a.m. on Monday, September 22nd, on oral sepsis. On Saturday, September 27th, at Camberwell House (Peckham Road), Dr. F. Norman will deal with mental diseases. The fee for the course is £3 3s., or £2 2s. for either week. A three weeks' course in ophthalmology is in progress at the Royal Westminster Ophthalmic Hospital from September 8th to 27th, comprising clinical instruction each afternoon from 2 o'clock, special demonstrations three times a week on methods of examination, a fundus class, and clinical demonstrations on common affections of the eye. From September 15th to 27th a course in infants' diseases has been arranged at the Infants Hospital, consisting of clinical demonstrations, "round table" consultations, and lectures, from 2 to 5 p.m.; the fee for the course will be £3 3s. Dr. Porter Phillips and Dr. Thomas Beaton are giving a series of lecture demonstrations in psychological medicine at the Bethlem Royal Hospital from September 30th to October 25th, on Tuesdays and Saturdays at 11 a.m., and will deal with the diagnosis and symptomatology of mental diseases, the psychoneuroses, and the medico-legal aspect of insanity. October courses will be held at the Paddington Green Children's Hospital in conjunction with the Victoria Hospital and Children's Clinic, Central London Throat, Nose, and Ear Hospital, Royal Free Hospital, London School of Hygiene and Tropical Medicine, and St. Peter's Hospital. Copies of the syllabus of each of the above courses can be obtained from the Secretary of the Fellowship of Medicine at No. 1, Wimpole Street, W.1.

THE following post-graduate courses have been arranged for the near future in Paris: a gynaecological course will be held at the Broca Hospital from September 22nd to October 4th, and will be mainly clinical and practical; a course in heart diseases, to include the study of cardiac syndromes of nervous origin, hypertension, and cardiac therapeutics generally, will be given at the Ambroise Paré Hospital from September 29th to October 11th; a practical course on the diseases of early infancy will be held at the Trousseau Hospital from October 6th to 18th.

A PRACTICAL course on dermatology and venereal diseases is to be held by the Faculty of Medicine at Strasbourg from September 22nd to November 8th. Lectures and demonstrations will be given at the Civil Hospital and the various special clinics concerned, and those attending the course will receive individual instruction in therapeutic methods, including radiotherapy and surgical procedures. After each lecture a summary of two or three pages will be furnished to each member of the class. The fee for the course is 200 francs, and application should be made to Professor Pautrier at the Faculty of Medicine. Help will be given with regard to finding lodgings in Strasbourg during the course.

WE have received a copy of the list of old students of St. Thomas's Hospital corrected to last June. The previous edition was issued in 1922. The book is full of information of interest to old students of the hospital. On the title-page are the telephone numbers of the various departments of the

hospital. There is a complete list of the days and times of attendance of the medical and surgical staffs. The names of old students are arranged in two lists—the one alphabetical and the other according to locality. In the alphabetical list there are given the date of entry, the qualifications and distinctions, and the address of each individual, together with a summary of his scholarships, posts held while at the hospital, and present appointments. The local list is followed by lists of medical officers of the naval, military, and Indian services, of past and present officers of the hospital and medical school, and of scholars and medallists. There is also a record of old students who have died since the last publication of the book. The editor, Mr. Robert Hopkins, is to be congratulated on having produced the best old students' list that we have seen.

THE next half-yearly election for the admission of fatherless children to the Royal Infant Orphanage, Wanstead, E.11, will be held in November. Children under 7 years of age are eligible, and applications for information and nomination papers should be addressed to the Secretary at the Orphanage at once.

THE freedom of the city of Warsaw, where she was born and received her early education, has been conferred on Madame Curie.

THE King has granted Dr. Charles Todd, O.B.E., technical expert to the Egyptian Department of Public Health, permission to wear the insignia of the Second Class of the Order of the Nile conferred upon him by the King of Egypt in recognition of valuable services rendered.

THE international congress on industrial hygiene, held at Geneva in July, attracted some thirty doctors and others interested from Europe, America, and Japan. Professor Leonard Hill's paper on ventilation and the value of the kata-thermometer was read by Dr. Wyatt, owing to the indisposition of the author. Other questions considered were fatigue tests, the application of methods of illumination in workshops, and miners' nystagmus.

THE annual general meeting and conference of the Institute of Industrial Welfare Workers will be held at The Hayes, Swanwick, Derbyshire, from September 26th to 29th. The subject of the conference will be "The doctor and the psychologist in industry." On September 27th Dr. C. S. Myers, Director of the Institute of Industrial Psychology, will speak on the subject of "What psychology can do for industry," and will be followed by Dr. W. F. Dearden, honorary secretary of the Association of Certifying Factory Surgeons, who will deal with the subject of "What medical science can do for industry." In the evening of the same day "The psychological and physiological aspects of accident prevention" will be discussed by Dr. Millais Culpin and Dr. H. M. Vernon, Investigator for the Industrial Fatigue Research Board. Further information may be obtained from the conference secretary, Miss N. J. Kessler, West Lynn, Altrincham, Cheshire.

THE annual general meeting of the Medical Sickness, Annuity, and Life Assurance Society, Ltd., will be held at the offices of the company, Lincoln House, 300, High Holborn, W.C.1, on Monday, October 6th, at 4 p.m.

ST. LUKE'S INTERNATIONAL HOSPITAL in Tokyo has received 150,000 yen (over £13,000) from the Japanese Home Department to provide additional equipment. This money comes from the fund raised by the Japanese Red Cross Society after the earthquake in September last year, and is given in view of the work carried on by the hospital among the necessitous, and also in consideration of the fact that the hospital buildings were destroyed at that time.

THE annual exhibition of the Royal Photographic Society of Great Britain will be opened at 35, Russell Square, W.C.1, to-day (Saturday, September 13th) at 3 p.m., by the president, Mr. J. Dudley Johnston. The memorial to Henry Fox Talbot will be unveiled by Dr. G. H. Rodman. The exhibition will remain open until Saturday, October 25th.

IN *Vital Statistics of Non-Native Officials*, published by the Crown Agents for the Colonies at 4, Millbank, S.W.1, price 6d., an account is given of the statistical returns for 1923. The invaliding rate shows a slight improvement on that of the previous year, though an increase in the death rate occurred.

THE *Journal of Nervous and Mental Diseases* of New York proposes to celebrate its fiftieth anniversary this year by the publication of an index to its fifty volumes.

THE fourth congress of the French Association of Pediatrics will be held in Paris from September 29th to October 1st inclusive, under the presidency of Professor Marfan. The subjects to be discussed include the etiology and pathology of rickets, the prophylaxis and treatment of congenital syphilis, and the treatment of purulent pleurisy in infancy.

WE regret to learn of the death, on September 9th, of Dr. R. J. Farman, secretary of the London Panel Committee.

IN compliance with the resolution adopted by the House of Commons before the adjournment, the Minister of Health has appointed a committee under the chairmanship of Sir Ernest W. Moir, M.Inst.C.E., to inquire and report as to new materials or methods of construction of houses for the working classes, and to make recommendations as to the organization required for securing the adoption and use of approved new materials or methods by local authorities and other bodies or persons providing such houses. The members of the committee include architects and engineers, persons interested in local administration, and representatives of master builders and operatives, as well as of the Ministry of Health and Office of Works.

DR. J. S. HALDANE, F.R.S., of Oxford, is the new president of the Institute of Mining Engineers, and will be in the chair at the annual meeting which is to begin at Wembley Exhibition on October 2nd. He is director of the mining research laboratory in the University of Birmingham, and his researches on the safeguarding of health in mines are well known.

DR. ETHEL BENTHAM has been nominated by the Minister of Health to be a member of the Metropolitan Asylums Board.

WE regret to record the death, on September 6th, at the age of 88, of Sir Frederick Needham, who had been associated with lunacy administration all his life, and was appointed a member of the Board of Control in 1892. We intend to give some account of his career in our next issue.

THE Council of the Royal Sanitary Institute has accepted the invitation of the city of Edinburgh to hold a congress and exhibition there next year (July 20th to 25th).

MR. JOSEPH BRIGGS has given £1,000 to the Bradford Royal Infirmary to name a bed in memory of his wife and other deceased members of his family.

THE late Mr. Frederick Fountain bequeathed to the Miller General Hospital for South-East London a house known as Cedar Bank, to be used as a convalescent home, and £12,000 as an endowment for its upkeep. Sir James and Lady Carmichael have given £10,000 towards the cost, estimated at £60,000, of erecting the William Shepherd Memorial Wing at the Bolingbroke Hospital, Wandsworth Common. Under the will of the late Mr. Walter John Tillett, shipowner of Penarth, the Cardiff Royal Infirmary receives £10,000, the income from which is to be devoted, first, to the maintenance of the Elizabeth Tillett bed in memory of his wife, and, subject thereto, for the general purposes and upkeep of the infirmary.

Letters, Notes, and Answers.

THE telephone number of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is Gerrard 2630 (Internal Exchange). The telegraphic addresses are:

EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology Westrand, London.*

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westrand, London.*

MEDICAL SECRETARY, *Mediocera Westrand, London.*

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin;* telephone: 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh;* telephone: 4361, Central).

QUERIES AND ANSWERS.

"AURIS" asks for advice in the selection of a battery for zinc ionization in ear cases. He has not found dry cells satisfactory, and has plenty of room at his command.

MUSHROOM POISONING.

DR. W. B. WINCKWORTH (Taunton) writes: This morning a patient of mine gathered a large basket of mushrooms, which his family divided with the next-door neighbour. In one case the stalks were removed before cooking and no ill effects followed the meal; in the other household the stalks were cut through and part of them were eaten: these people (three) suffered from acute vomiting and diarrhoea, but all the symptoms passed off in a few hours. What is the explanation? Does the stalk of the mushroom contain a poison which is not present in the mushroom itself? I have looked up *Mrs. Beeton*, and her instructions with regard to the preparation of mushrooms is "to peel the top and cut off a *portion* of the stalk." A possible explanation might be found in the cooking.

THREADWORMS.

DR. WILLIAM CORBET (Worthing) writes in response to "J. E. W.'s" request (August 30th, p. 391) for suggestions in the treatment of a stubborn case of threadworms: Has he by chance tried the effect of garlic, which has given me excellent results? I should suggest the nightly injection into the empty bowel through a

soft catheter of ʒviii–xii of a solution of garlic juice (conveniently prepared with suc. allii sativi, Allen and Hanburys) combined with the internal administration of garlic oil capsules ɱ2. If these can be obtained keratin-coated so much the better. The frequency of the enemata can be reduced as the condition improves, and the usual precautions against auto-reinfection are to be strictly observed.

DR. G. A. FERRABY (Nottingham) writes: Some years ago I successfully treated a case by the simultaneous use of salt enemata and the oral administration of santonin. The usual routine of a normal saline enema in the evening followed in half an hour by a smaller enema of strong salt solution was adopted. I thought it probable that threadworms in the upper part of the colon were killed by the santonin and in the lower part by the salt.

DR. G. S. ARMITAGE BISHOP (Melton Mowbray) writes: I had a similar case in a girl aged 12 years. After trying all the usual remedies, including massive doses of bismuth, I removed the appendix, which I found full of minute threadworms. Bismuth then cleared the condition in a few days, and she has now been free from threadworms for twelve months.

DR. GEORGE P. BLETCHLY (Nailsworth, Gloucestershire) writes that "J. E. W.'s" case is similar to one reported in the BRITISH MEDICAL JOURNAL of April 19th, 1924 (p. 735). The worms evidently breed in the appendix, and the only cure is to remove that organ.

*** We are reminded that Dr. Claude Wilson published a paper in this JOURNAL in 1912 (vol. i, p. 829), pointing out that the appendix is by no means an uncommon nursery for threadworms, and that obstinate cases which resist repeated courses of treatment may often, and perhaps generally, be thus explained. He referred to a paper by Mr. Burgess published in the same volume (p. 415) on five hundred consecutive operations for acute appendicitis, in which it was stated that threadworms were present in several cases. Dr. G. Macdonald of Scarborough, in the same volume (p. 485), reported a case in which, in an appendix removed from a woman, aged 34, two distinct collections of threadworms were found towards the base. Dr. Wilson also quoted from Dr. G. F. Still's book, *Common Disorders and Diseases of Children*, in which the subject was discussed at some length. In one hundred necropsies in children between the ages of 2 and 12 years Dr. Still found threadworms in 32 per cent., and in two-thirds of these they were in the appendix. He added that in some cases the appendix was the only part in which the threadworms were found. Dr. Still's conclusion was that the appendix was a common breeding ground for threadworms, and that this made intelligible the extreme obstinacy of some cases to all treatment.

HARD WATER AND CALCULI.

"C." asks: Does "hard water"—that is, lime, etc.—tend to produce stone in the kidney or bladder? Is hard water injurious to one who has on several occasions passed a renal calculus?

*** Opinion on these questions is divided. Surgeons for the most part speak of "hard water" as an etiological agent in calculus formation. Physicians are cautious in the expression of their opinions, and shelter themselves with "may" or "it is said." Pathological textbooks do not consider it likely that hard waters favour the formation of renal or vesical calculi. Hygiene experts are almost unanimous in boldly declaring that "hard waters" do not predispose to such deposits. This diversity of opinion is partly due to the fact that discrimination has not always been made between the two questions asked. We would answer the first in the negative, and the second (but with less confidence) in the affirmative. It must be remembered that stones in the kidney are usually composed of urates, uric acid, oxalates, or a combination of these with phosphates. Vesical calculi are commonly phosphatic. The hardness of water is due chiefly to carbonates, and to a lesser extent to sulphates and phosphates. A calculus consists of a nucleus of mucus, cell debris, or foreign matter in and upon which the urinary salts become deposited, often in concentric layers. The formation of a calculus is due to some defect or disease in the organs of excretion, and there seems little reason why we should blame other systems. But once the calculus has formed it is possible that the drinking of water rich in calcium salts may be instrumental in furnishing bases for inorganic calculi.

INCOME TAX.

Sale of Practice and Purchase of Another.

"L. B. C." sold a practice at A and purchased one at B. In accounting for his liability in respect of the latter practice he included as cash receipts moneys received but handed over to his predecessor; the inspector of taxes at A, however, requires him to pay tax on moneys handed on by his successor there, or, as an alternative, to put the assessments there on to the basis of bookings.

*** There is obviously a difference of practice between the two inspectors, which, if carried through, would hit our correspondent unfairly. The practice at B has, in our opinion, been dealt with correctly, and we consider the attitude of the inspector at A to be without justification. "L. B. C." might inquire whether his successor at A is not adopting the cash receipt basis; whether he is in fact or not it is presumably open to him to do so, provided that he includes *all* the receipts in his computation, and it must surely be obvious that "L. B. C." cannot be made to include in his returns payments which can correctly be included in the returns of another person. The arrangement made at B is tolerably simple and quite common, and the request that "L. B. C." shall pay on past receipts at A can be correct only if the past assessments have been insufficient. The inspector practically admits this in putting the alternative of putting the assessments from 1920–21 onwards on to the gross bookings basis. But this would be unfair. The earliest of the years providing the 1920–21 average would be 1917, when, owing to the war, the level of book debts was no doubt low. "L. B. C." adhered loyally to the cash basis arrangement when it was against him, and it would be altogether unreasonable to alter it now—and on what ground? That he has sold the practice, which is a fact quite irrelevant to the main question. If the arrangement can be set aside in such a case as this, there seems to be no reason why any inspector at any time should not decide to effect a change and revise four or five years' assessments at once. We suggest that "L. B. C." might put his views to the inspector at A once more; if he does not receive reasonable satisfaction he might point out to the Secretary, Board of Inland Revenue, Somerset House, W.C.2, the effect of the difference in practice between the officials for the two districts and ask the central authority to say which view is considered to be correct.

Adjustment of Assessment.

"A. P. A." seeks advice in somewhat unusual circumstances. Some time ago he purchased a practice from his father for a certain sum, the debt to be liquidated by payment to the father of the annual profits, less £600 retained, until the capital sum was extinguished. "For convenience" the father continued to return the practice profits for assessment to income tax on the basis that he was the proprietor, and that he paid a salary of £600 per annum to the son. It may be assumed that by April 5th, 1925, the debt will have been paid off; the son has been refunding to the father tax at the standard rate on the annual allocations to the debt, seeing that these sums represent capital so far as the latter is concerned. How long should this continue?

*** The arrangement made between the two parties is, of course, entirely innocent, but is equally wrong, and may possibly have affected the total amount of tax paid (one way or the other) in connexion with allowances, such as for earned income and life assurance. There is a fallacy involved in speaking of paying tax in 1925 on the 1924 receipts; tax paid on the return for the financial year ending April 5th, 1926, is the tax on the earnings *of that year*, though the amount paid is calculated on the artificial three years' average. It seems to us that a simpler adjustment would have been for the son to pay all the income tax liability from the date he took over the practice, *plus* the relief afforded to the father on the assessment. If it is desired not to make any radical change the son might take over *all* tax in respect of the year commencing April 5th, 1925, and onwards; but the only way of obtaining a really correct adjustment would appear to be to approach the local inspector of taxes, explain the circumstances, and obtain a recalculation of the respective liabilities of father and son.

LETTERS, NOTES, ETC.

THE DURATION OF PREGNANCY.

DR. D. A. MCCURDY (Londonderry) writes: Medical men concerned in the medico-legal aspect of the duration of pregnancy may be interested in the following figures: a woman confined on August 13th, 1921, assured me—and I believed her statement—that up to the time she became pregnant after her previous confinement she had had but one connexion with her husband, which occurred on November 22nd, 1920. The period of gestation would therefore be 265 days, or 38 weeks less 1 day.

A WARNING.

DR. ARTHUR LEE of Bournemouth writes to say that he was induced to lend some money to a person who seems to be the same individual as mentioned by Dr. W. G. Niall (Chatham) in our issue of August 23rd (p. 348). The money was not repaid by the date promised.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 32, 33, 36, and 37 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 34 and 35.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *115*.